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TESTACEA BRITANNICA

OR

Natural History

OF

BRITISH SHELLS,

MARINE, LAND, and FRESH-WATER,

including the most minute: systematically arranged and

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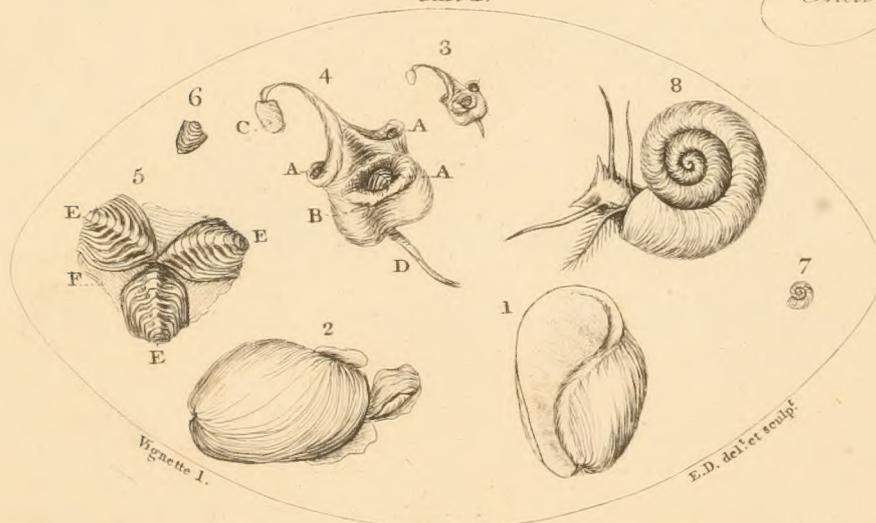
BY

GEORGE MONTAGU. F.L.S.

*Each shell, each crawling insect holds a rank
Important in the plan of Him, who framed
This scale of beings; holds a rank, which lost
Would break the chain, and leave behind a gap
Which nature's self would rue.*

Part 1.

Shillingflect.



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TESTACEA BRITANNICA;

OR,

BRITISH SHELLS.

PART I.

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INTRODUCTION.

AS natural history has, within the last half century, occupied the attention and pens of the ablest philosophers of the more enlightened parts of the globe, there needs no apology for the following sheets; since the days of darkness are now past, when the researches of the naturalist were considered as trivial and uninteresting.

In the present age, it is acknowledged, that every link in the great chain of nature is important, the study of which may tend not only to the comforts and luxuries of life, but to the love, adoration, and, admiration of that being, who alone was capable of forming the whole.

When the great LINNÆUS first began his system of nature, he did not consider conchology as worthy his notice, as shells are only the covering or exuviae of animals; but as their extreme beauty, and variety, naturally attracted attention, and their durability enabled

them to be preserved without trouble, no branch of natural history has been more sought after.

If it were possible to add to the description of each shell, that of the history of the animal inhabitant, it would, most undoubtedly, have been of great importance with respect to their arrangement: such indeed has been partially attempted, but if we consider the difficulty of obtaining the greater proportion of shells in a recent, or living state, we shall at once perceive the impossibility of classing them by the animal.

Great as the difficulty may be, to define the numerous species according to the Linnæan, or any other method, by the order, situation, and number of teeth, and formation of the hinges, in bivalves; and the structure of the mouth, or aperture, in univalves; yet we believe it is less perplexing, than it would be by the animal itself, from the impossibility of investigating by dissection, the anatomical parts of the more minute species: so that upon the whole, it must be confessed, though arbitrary, the only, method of throwing shells into divisions or genera is, by their form and structure.

Various have been the attempts of different authors with regard to systematic arrangement, but we do not think

think they have improved upon the Linnæan plan, or in the least elucidated the subject: it must, however, be confessed, that some of the generic characters of that great naturalist, are not sufficient distinctions, though we admit, it would perhaps be difficult to alter them for the better: and as to the animals, that inhabit the same genus of shells, being all the same, as has been generally supposed, we may venture to affirm, that similar shells are sometimes inhabited by very different animals; and that few of the Linnæan genera of testacea, are wholly inhabited by the same kind of animal. On this subject, however, much remains to be done, being as yet in considerable obscurity.

Some new genera might probably be formed with advantage, as a vast variety of shells have been discovered since the last edition of the *Systema Naturæ*, which were wholly unknown to LINNÆUS; and amongst them many productions of our own coasts, which do not strictly belong to any of the Linnæan genera. We have, however, pretty strictly adhered to that arrangement, except in a few instances.

The genus *Lepas*, we have divided into two; after the plan of Doctor PULTENEY, as not possessing any similitude, except in that of the animal inhabitants.

Those

Those of the sessile kind, are termed *Balanus*; while the pedunculated are continued under their original title. In the *Ostrea*, those which are aurited, are separated under the generic denomination of *Pecten*; and we have also added a new genus next to the *Serpula*, for such as bear some affinity to that tribe, but do not come under the Linnæan characters of the genus, being independent, and not affixed by the base to other bodies; which we have called *Vermiculum*. These last, indeed, were almost wholly unknown to LINNÆUS, and are entirely of the more minute kind.

In the species, as far as were known to that author, we have also retained his trivial names, wherever they could be clearly identified, except in a few instances, where those of some english authors were adopted, as better known to the british conchologist; or where we had occasion to place them in different genera.

It is not our intention to trace the history of conchology from the earliest writers on the subject, as we have chiefly quoted those of more recent date, since that branch of philosophy has been better understood.

Amongst the foreign topical writers, MARTINI, CHEMNITZ, MULLER, SCHROETER, and GUALTIERI stand

stand high in reputation, to whom we have referred in general; especially the copious works of the two former, whose numerous figures have, by the aid of GMELIN, enabled us to ascertain many of the Linnæan species.

Of english testaceological authors, there are few who have treated on the subject at large; amongst these LISTER stands foremost, and who first attempted a description of english shells in 1678, in his *Historia Animalium Angliæ*; and afterwards his *Synopsis*, which contains, amongst a vast variety of foreign species, all his english shells, with additions. This work was finished in 1694, and the last edition was published at Oxford in 1770, under the inspection of Doctor HUDDSFORD.

After LISTER, PETIVER was the only one for some years, who added to conchology any thing new, except a few provincial historians, PLOT, MORTON, BORLASE, DALE and others. Nothing, however, appeared in the least compleat on the subject, exclusively on english shells, for near a century after the writings of LISTER, when Mr. PENNANT treated professedly on that history, in the fourth volume of his *British Zoology*, published in 1777, to the no small advantage of that science, by the addition of a great number of well executed figures, and by far the greater part of what he described; in which he nearly adhered to the Linnæan system.

In

In the year 1778, DA COSTA brought out his *Historia Naturalis Testaceorum Britannicæ*, or British Conchology, with copious descriptions, embellished with 123 figures of distinct species, many of which were unknown to preceding writers. This author has professedly entered upon a new system, built upon his Elements of Conchology, before published; and it is to be lamented, that he did not at least adopt the Linnæan specific, or trivial names, to which the ear of the conchologist has been so long familiarized: his synonyms, however, are copious, which facilitates the identity of each species.

At this time, no one had thought the more minute shells of our coasts, of sufficient importance to give them a thorough investigation, or at least to describe them, although something of this nature had been attempted at Rome by PLANCUS in 1760, entitled *Liber de Conchis minus Notis*, in *Littore Ariminensi*.

To the indefatigable researches of Mr. BOYS of Sandwich, this task was reserved, by whose ample assistance Mr. WALKER was made acquainted with all the microscopic shells of that coast, which enabled him in the year 1784 to publish a work, entitled *Testacea minuta rariora*; in which are described 87 minute species, accompanied with figures, the most part of which were entirely new. This undertaking laid open an entire new field

field in British testaceology; and those who have since paid any attention to the subject must own, that their labours are amply repaid by the superior beauty and elegance of this diminutive tribe; and it must be confessed, that the history of shells cannot be complete without them. From these probably some new genera might be, with propriety, formed; and to which alone we are indebted for several species of the *Nautilus* genus, a desideratum before in the British Fauna.

Since this period, a catalogue and description of shells, found in Dorsetshire by Doctor PULTENEY, has been given in HUTCHINS's history of that county; amongst which are many new and rare species.

Mr. DONOVAN is also at this time publishing a History of British Shells, with elegant coloured figures, which is to be concluded in sixty numbers, making five vols. octavo, four of which have already been laid before the public; these, however, have not included the more minute species.

In the Linnæan Transactions Mr. ADAMS has entered upon the subject of minute shells, and has given figures of several perfectly new, from the south coast of Wales.

Much, however, remains to be done; for when we consider the locality of the productions of nature, and the small portion of our extensive coasts, which have been examined with a microscopic eye, it need not be feared that the subject will soon be exhausted, or that we have yet a knowledge of one half of the smaller species, which elude the researches of the naked eye. In order, therefore, to make the history of british conchology as compleat as the nature of things would admit, a work was wanting, that would bring the whole into one view, systematically arranged.

Such a work we have been induced to undertake, by the great variety of shells which have fallen to our lot to discover, many of which have never been described as english, and some entirely new; which, together with those already known, will make near four hundred and seventy different species; a number far exceeding any thing hitherto on the subject, and more than treble those described by *DA COSTA*; and we trust it will be received with that candour usually bestowed on so intricate, and arduous an undertaking; as our best endeavours have not been wanting to elucidate a subject, the investigation of which has been productive of so much pleasure and amusement, our researches having been extensive;

ensive; not confined to the closet, but have drawn the hidden treasures from their native sites.

The descriptions are as concise as possible, consistent with the necessity of giving a full and perfect idea of each species; and figures are given of such only as are entirely new, or have not appeared in any english work, except in such cases where it was thought requisite for the purpose of comparison.* To which, in many instances, is added a short description of the animal inhabitant, a circumstance of no small importance in aid of discriminating some nearly allied species; though of no generic use in conchology. An attention to this alone, could have induced us to refer, in many instances to MULLER.

The synonyms are drawn from some of the best authors, and most topographical writers omitted, except in a few cases, where the objects were in obscurity.

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Should

* As it was impossible to be aware of the extent of Mr. DONOVAN's cabinet, or of the shells he intended to figure, duplicates will unavoidably occur in a few instances in our work, as some of the plates were engraved when little more than two volumes of that publication had made its appearance. Some species also originally intended to have been given in this work, have been anticipated by Mr. DONOVAN, and thereby we are enabled to refer to good figures to illustrate our intentions, without multiplying representations of the same subjects.

Should the following sheets be deemed to possess any small share of merit, the public are indebted to the labours of a friend, who not only undertook the engraving, but in part also the colouring of the figures; executed from the objects themselves, they are a faithful representation, unadorned with the gaudy, high-coloured tints, which too often mislead.

But for this assistance, so necessary in the smaller species, this work might never have seen the light; and it is only to be regretted, that it was found too large an undertaking for the hand that gave it existence, to figure all the shells that could have been wished.

As this friend of science, however, may not undeservedly feel the shafts of the critical artist, it may be right to disarm them, by observing that, the feminine hand of the engraver was self taught, and claims no other merit in the execution, than what results from a desire to further science by a correct representation of the original drawings, taken by the same hand; both equally the works of amusement, not labour for emolument. Further, it was not originally intended that any but coloured figures should be given, and that only to a few copies, printed on superior paper; but overpowered by the desire of particular friends, plain impressions are
suffered

suffered to go into the world with the inferior copies, though executed only for the purpose of colouring.

To the naturalist therefore, and not to the artist an appeal is made; if the representations are correct outlines of the objects, the design is accomplished; and we trust science will be considered as having reaped more advantage from such, than from highly finished engravings devoid of correctness and character.

The species hereafter described, with a few exceptions, are in our own cabinet, and have chiefly been collected from their native places by ourselves, or by the hands of a few friends, whose conchological knowledge, and scientific researches are too well known to be doubted: but under every individual, the authority of its being british will be found; and when any doubts are entertained, it is particularly specified.

Aware that some shells have been given as english which never originated there, we have been cautious of admitting any thing, but upon the best authority; and where we have expressed doubt, we beg it may not be considered as arrogance, or contempt of the opinion of others, but a wish to develop truth: we are all liable to
err,

err, but those least, who search for nature where nature flows.

Subjoined will be found a succinct description of the several animals inhabiting shells as recorded by LINNÆUS and others; and a sketch of the Mullerian arrangement of univalve shells, by their several inhabitants. To which is added a copious alphabetical as well as systematical index.

It now only remains for us to return our sincere thanks to such friends as have assisted us through this undertaking with specimens, and information on the subject; and we take this opportunity of publicly acknowledging their favours.

Amongst these, particular obligations are due to our much esteemed friend, and able conchologist, the late Mr. BOYS of Sandwich, by whose kind assistance we have been able to ascertain almost the whole of the minute shells found on that coast, as published by WALKER, with many additions entirely new.* In these acknowledgments

* From this patron of science, we also received a nomenclature by Doctor SOLANDER, of many minute shells he had sent to Bullstrode for the Dutches of Portland; and others received from the Doctor at the same time, from her Grace's cabinet in return. This has been of considerable service to us with respect to synonyms.

ledgments we beg leave to include our thanks to Mr. HENRY BOYS, son to our late worthy friend, for his joint assistance.

To that able naturalist, the late Doctor PULTENEY of Blandford, we are indebted for many rare specimens from the coast of Dorsetshire, and for his information and remarks; which were not of less assistance to us than his Catalogue, published in HUTCHINS's history of that county, and separately for the use of his friends.

To Mr. SWAINSON and Mr. SOWERBY of London, we beg also to return our acknowledgments for their assistance in specimens; and moreover for the ready access to their cabinets: and for similar acts of kindness, our thanks are equally due to the Rev. THOMAS RACKETT.

The very friendly assistance given us by that promoter of science, and attentive observer of nature, Mr. BRYER of Weymouth, and in particular, for the permission of selecting any thing from his little cabinet of some of the more rare shells, found on that coast, deserves our warmest thanks; as it enabled us to add several nondescript species to this work.

And last, though not least, our valuable and worthy friend, Doctor LATHAM of Romsey, claims our
par-

particular acknowledgments, not only for the ready access to his well stored library on natural history; but for the very great assistance of superintending the press, and thereby contributing not a little to the furtherance of the design, which otherwise, for want of convenience, might have continued much longer in darkness.

We shall now conclude this introduction by remarking, that in the various pursuits of natural history, our notes on shells indigenous to Great Britain had some years past increased so considerably, and so far exceeded any thing extant upon the subject, that we had begun to throw them into some form, with intention of giving our discoveries to the world on some future day.

At this juncture, being informed by a valuable conchological friend, that such a work was undertaken by an acquaintance who would be much obliged by any assistance, we did not hesitate to relinquish our design, wishing the subject in more able hands; and most cheerfully communicated such information as was thought conducive to such a history; being always ready to lend our feeble aid to the friends of science. Several plates were engraved for this work, but for what reason the letter press never made its appearance is not known; it was, however, not intended to take in the minute species.

As soon, therefore, as we were informed from the best authority, that this scheme was abandoned, (which we should have the more regretted, if it had been intended to include the whole british testacea) we again took the resolution of giving our discoveries to the public in a systematical arrangement, which should include shells of every description, found within the island of Great Britain, and its circumfluent seas; the result of which, is the following sheets, in which no pains have been spared either in collecting the synonyma of authors, or in pointing out the mistakes into which they may have fallen. By thus consulting the various writers referred to, the synonyms are founded upon strict personal investigation, and not copied from others; a circumstance too frequently the cause of unnecessary extension of species, and the perplexity of science.

We do not pretend to assert that no errors are to be found in this work, on the contrary, it would be surprising if there were not many on a subject so intricate and abstruse; it must however be recollected, that in many instances where individuals have been described in a very laconic manner, reference to such objects can only depend on individual opinion; for we may venture to affirm, that scarce two conchologists will be found to a-

gree, as to the identity of a large portion of the Linnæan Testacea: in order, therefore, to obviate these embarrassments, authors have too frequently been induced to follow each other. Under these difficulties we have endeavoured to clear the way, as well as the nature of circumstances would admit,

Whenever we have pointed out the errors of others, it has been wholly with a view to elucidate the subject, without the least intention of disparagement to such works; and we trust it will be found, that none of our illustrative remarks carry with it invective.

We, in our turn, expect similar remarks by others, who may hereafter treat on the subject, when time and opportunity may have increased the catalogue of English shells: till then, we hope our endeavours will be rewarded by the approbation of the scientific reader, (at least for the good intention,) with whom it remains to determine, whether we have fallen short, or not, of the general plan.

GEORGE MONTAGU.

Knowle, Sep. 1, 1803.

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GENERIC



GENERIC CHARACTERS

OF

The several Animals inhabiting Shells,

Many of which are found independent, in a true Mollusca State.



SHELL, is the natural covering of many animals for the protection, security, and defence of their soft and delicate bodies; and which grows, and enlarges as the encreasing bulk of the animal requires: it must therefore be considered as much a part of the animal as the covering of a crab or a tortoise.

The animals hitherto discovered to inhabit the shells of Great Britain, which have been thoroughly defined, and reduced to systematic arrangement are

- | | |
|-----------|--------------|
| 1 Doris. | 6 Spio |
| 2 Triton | 7 Amphitrite |
| 3 Ascidia | 8 Terebella |
| 4 Tethys | 9 Nereis? |
| 5 Limax | |

1 DORIS.

Body creeping, oblong, and flat beneath; mouth placed below on the fore part: vent behind, usually on the back, and surrounded by a fringe: feelers two or four, seated on the upper part of the body in front, and retractile within their proper receptacles.

The *Doris* is the inhabitant of the *Chiton*: many elegant species are mollusca.



2 TRITON.

Body oblong; mouth with an involute spiral proboscis: tentacula or arms twelve, six on each side, divided nearly to the base, the hind ones cheliferous.

The *Triton* is found to inhabit *Balanus* and *Lepas*: and one single species inhabits the sea in a mollusca state.



3 ASCIDIA.

Body fixed, roundish, and apparently issuing from a sheath: apertures two, generally placed near the upper part, one beneath the other: adhere by their base to rocks, shells, and other marine substances; are more or less gelatinous, and seem to have no other powers of motion

tion than contracting and dilating themselves alternately, by which means they eject the water taken in, with considerable force.

The *Ascidia* is rather a numerous genus: is found to inhabit *Pholas*, *Solen*, some of the *Mya*, *Mastra*, and probably part of other bivalve testacea: many species are mollusca.

It is probable this, as well as most other aquatic animals possessed of little or no locomotion, are androgynous; the power of self-propagation most likely extends to all the inhabitants of multivalve and bivalve testacea, but to few, if any, of the univalve, except *Serpula*, or such as are sessile.



4 TETHYS.

Body detached, rather oblong, fleshy, without peduncles: mouth with a terminal, cylindrical proboscis, under an expanded membrane or lip: apertures two on the left side of the neck.

The *Tethys* is not found in a mollusca state in the British seas, but is supposed to inhabit the greater part of bivalve shells; according to LINNÆUS, the *Tellina*, *Cardium*, *Mastra*, *Venus*, *Osireca*, and others; this, however, is not without exceptions in many instances.

5 LIMAX.

5 LIMAX.

Body oblong, creeping, with a fleshy kind of shield above, and a longitudinal flat disk beneath: aperture placed on the right side within the shield: feelers four, situated above the mouth, with an eye at the tip of each of the larger ones.

These are what have been generally considered as the generic characters of the *Limax*, Slug, or Snail, and seem to correspond with the formation of those species which are found in a mollusca state; but with respect to the various animals which have been considered as belonging to this genus, for the most part inhabiting the turbinated univalve shells, we fear too much latitude is required to bring the whole, or even the greater part of them, into the *Limax* genus. It is well known that most, if not all, fresh-water, as well as most marine univalve shells, are inhabited by an animal possessed of only two feelers, or tentacula, destitute of eyes at their tips, but placed at their base, varying in situation in different subjects: in some also the tentacula are long, and setaceous, in others short, broad and flat.* It is also a question whether the aperture on the right side would take in those animals which have every other character of the true *Limax*, found to inhabit the heterostrophe, or reversed shells,† all of which have the foramen, or aperture on the left side.

The

* From the number and formation of the tentacula; and the relative situation of the eyes, MULLER has formed many new genera out of the *Linnean Limax*.

† For a definition of this appellation, see page 351.

The Linnæan characters certainly take in the whole of the land shells we are acquainted with, except these, and one or two others; but besides the difference in the number of tentacula, and situation of the eyes, the circumstance of the aquatic testacea being inhabited by animals of different sexes, and not hermaphrodites, as in the mollusca *Limaces*, and such as inhabit most land shells, have never been thoroughly attended to. These, however various, have generally been considered to come indiscriminately within the *Limax* genus; as such we shall leave them at present, this work being professedly on shells, and not on their animal inhabitants, more than is sufficient for specific purposes.

At the end of this, we have subjoined a plan of MULLER's arrangement of univalve testacea by the animal, in order to shew to what great variety the Linnæan *Limax* is extended.



6 SPIO.

Body projecting from a tube, jointed, and furnished with dorsal fibres: peduncles rough with bristles, and placed towards the back: feelers two, long, simple: eyes two, oblong.

The *Spio* inhabits *Sabella*: one or two species on our coasts very minute, the cases, not described under the article *Sabella*, being invisible to the naked eye.

7 AMPHI-

7 AMPHITRITE.

Body projecting from a tube and annulate: peduncles, or feet small, numerous, with lateral fasciculi, and branchiæ: feelers two, approximate, feathered: no eyes.

The *Amphitrite* inhabits some species of *Serpula*, and *Sabella*, or holes in rocks.



8 TERESELLA.

Body oblong, creeping, naked, furnished with lateral fascicles or tufts, and branchiæ: mouth placed before, furnished with lips, without teeth, and protruding a clavated proboscis: feelers numerous, ciliated, capillary, feated round the mouth.

The *Terebella* inhabits many species of *Serpula*, *Dentalium*, and *Sabella*; many are destitute of any natural covering, but fix themselves in holes of rocks.



9 NEREIS.

Body long, creeping, with numerous lateral peduncles, or feet on each side, and fasciculi: feelers simple, rarely none: eyes two or four, rarely none.

The

The *Nereis* is said to inhabit the *Sabella*; possibly in some instances this may hold good, but we suspect the greater part are independent in a mollusca state, inhabiting the sand and mud at the bottom of the sea, where they form themselves cells; and are much more active than the other three preceding species.

Besides the animals here enumerated, there are doubtless many whose habitations are testaceous, which at present are wholly unknown: that of the *Nautilus* seems to be very imperfectly understood: it is figured in *Rumpf. Mus. tab. 17. fig. B.* but no one appears as yet to have arranged it, or even ventured to give it a name.

It is most probable, many of the minute straight *Nautili* are inhabited by animals very different from those of the convoluted kinds.

Some species of *Serpula*, especially those of a concatenated structure, are doubtless inhabited by animals of a different nature from those which reside in shells of a more simple form.

The *Vermicula* are probably inhabited by various animals, as their structure is so variable; but it is likely we shall ever remain in ignorant conjecture with respect to the conformation, and anatomical definition, of such diminutive creatures, so obscured by their testaceous covering.



MULLER'S ARRANGEMENT
 OF
 UNIVALVE TESTACEA,
 BY THEIR
 SEVERAL ANIMALS.



MULLER has divided his *Vermes terrestres & fluviatiles* into genera, by the number, and form of the tentacula, and situation of the eyes; by which the Linnæan arrangement of testacea is overthrown, and mixed indiscriminately throughout the Mullerian system: in this the mollusca Snails, or naked *Limaces*, are included, as the fourth column of the plan annexed will evince, where the Linnæan generic names are prefixed to those of MULLER, enumerated in the third column.

WITHOUT SHELL.

		<i>Mull. Syst.</i>	<i>Lin. Syst.</i>
Tentacula linear 4	{ eyes at the tip of the longest.	Limax.	Limax.

UNIVALVE

UNIVALVE SHELL.

		<i>Mull. Syst.</i>	<i>Liv. Syst.</i>
Tentacula linear 4	eyes at the tip of the longest	Helix.	Helix.
Tentacula linear 2	eyes at the tip	Vertigo.	Turbo.
Tentacula fetaceous 2	{ eyes at the base exterior { eyes at the base interior	Nerita.	{ Helix. Turbo.
		Planorbis.	{ Helix. Bulla.
Tentacula truncated 2	{ eyes at the base posterior { eyes at the base interior	Valvata.	Helix.
		Ancylus.	Patella
Tentacula triangular 2	{ eyes at the base posterior { eyes at the base interior	Carychium.	Turbo.
		Buccinum.	Helix.

TO THESE MAY BE ADDED,

Tentacula fetaceous 2	} eyes at the base	Turbo.
Feelers 2 one plumose		

The last division does not belong to the Mullerian system, but is introduced for the purpose of shewing another strong sub-division by the animal; and which would include the *Valvata* of MULLER. It is very extraordinary, that author did not avail himself of such a strong mark of distinction for his generic character of *Valvata*; whereas, he has only used it specifically by calling the only species he knew *cristata*. To this, however, might be added, his *Nerita piscinalis*, the *Turbo fontinalis* of this work; which is also crested or plumose.

Besides what has already been remarked, that some of this class are hermaphrodite, and others of different sexes; it will be found also that some are oviparous, and others viviparous; and it is remarkable, that all those

with four tentacula, whose eyes are placed at the summit of the two longest, are hermaphrodite, and are all land species. Those with two tentacula, and their eyes situated on the head, are of different sexes; and except two known species at present (*Turbo elegans*, and *Carychium*;) are all aquatic.

Among this last division, one or two are *viviparous*, a circumstance not known amongst the land species.

If under such variations these animals are all to be considered as *Limaces*, the generic characters must be a little more extended than those fixed by *Linnæus*; and should at least run thus to comprehend all the varieties.

Body oblong, creeping, with a longitudinal flat disk beneath; aperture most usually placed on the right side: tentacula two, or four: eyes two, placed either at the base of the tentacula on the head, or at the extremity of the two longest.*

That the Linnæan *Limax* ought to be divided there can not be the least doubt; but we cannot agree with MULLER, that it is capable of forming so many genera, by the mere circumstance of the eyes being placed a little more or less behind, or to one side of the tentacula. There seems, however, to be two strong natural divisions;

* If the animal of *Turbo elegans* should prove to be possessed of four eyes, which we suspect, the characters must be further extended thus, eyes two rarely four, &c.

sions: first, those with ocellated tentacula; and second, such as have their eyes situated on the head: each of which might again be divided into two families; thus,

1 LIMAX.

Body oblong, creeping, with a longitudinal, flat disk, or sustentaculum, beneath: foramen, or aperture, most usually placed on the right side: tentacula ocellated.

Terrestrial, hermaphroditical.

* Tentacula four: eyes two, placed at the summit of the two longest.

** Tentacula two.



2 LUBRICA.

Body oblong, creeping, with a longitudinal flat disk, or sustentaculum, beneath: foramen, or aperture, most usually situated on the right side: tentacula not ocellated: eyes two, placed on the head. Mostly aquatic, and of different sexes,

* Tentacula, or feelers, four, one of which is plumose.

** Tentacula two.

To the first division of the *Limax* would belong all the mollusca tribe usually termed Slugs: of these the *Limax cinereus*

cinereus and *agrestis*, GMELIN p. 3100, and p. 3101,* appear to be the link between the testacea and mollusca, (being possessed of a shelly substance under the shield upon the back,) connecting these land animals together; as some of the marine *Bullæ* do that of the aquatic: *Bulla aperta*, *haliotoidea*, and *plumula*, equally conceal their shells.

The circumstance of some of the naked *Limaces* possessing a shell internally, the anatomical enquiries of SWAMMERDAM and LISTER could not overlook; both these authors have described and figured it.†

That these animals therefore belong as much to the *Vermes testacea* as many of the *Bulla*, there is no doubt; but it was not thought necessary at present to form a new genus on purpose, for a shapeless shell of irregular growth.

It is usually somewhat oval, sometimes flat and thin, with a membranaceous margin; others are half as thick as they are broad, and rarely possessed of any concavity: colour silvery-white, or of a micaceous appearance; the upper side is a little convex, and slightly wrinkled concentrically to the smaller, or posterior, end: the under
part

* *Limax flans*. *Lin. Trans.* iv. p. 85. tab. 8. Both these *Limaces* are capable of suspension, as well as others which are destitute of similar internal conformation. *Limax parvus cinereus*. *Lister Conch.* t. 101. f. 101.—*Id.* t. anat. f. 5.

† *Hill. Swammerd.* p. 71. t. 8. f. 8.—*List. Conch.* t. 5. anat. f. 5.—*Id. Angl.* p. 128. t. 2. f. 15.

part is sometimes rough, and granulated with crystal-like, shining angles.

This shell is the *Lapis limacis* or Snail-stone of authors, and is said to have been used for medical purposes: according to popular opinion, it cures the tertian ague, if fastened to the patient's arm.*

FAVANNE has figured several species of *Limax* in his *Zoomorphose*, tab. 76, that appear to be the intermediate link between such as possess an internal shell, and those with testaceous covering; these have only a small shell attached to the posterior end. But as no such have been discovered in *England*, we only mention it to shew the nice gradations in nature's work; and how utterly impossible it is to divide that chain, which she has so admirably linked together.

* Encyclopædia Britannica.

ERRATA.

PART I.

- Page 2, l. 4, for eight read *eighths*
 9, 17, run r. *runs*
 18, margin, Scalpellum, f. 4.
 r. l. 3
 38, ditto, Inequevalvis r. *Inæ-*
 quivalvis
 39, l. 14, entrance, r. *entrances*
 41, margin, Prætenuis, r. *Præ-*
 tenuis
 108, Synonyms, Borl. Corn. t. 38
 r. t. 28
 152, l. 22, rocky, r. *rocky*
 175, note,* antennæ was, r. *were*
 215, l. 7, pinnatifid, r. *pinnati-*
 fid
 217, l. 4, nd, r. *sand*
 245, margin, Lineatum r. *Line-*
 atum
 249, Gualteri, r. *Gualtieri*
 250, dele : after *anfractibus*
 271, l. 1. month, r. *mouth*
 272, l. 22, Sandwhich, r. *Sand-*
 wich
 288, l. 16, Anglica r. *Angliæ*

PART II.

- Page 327, margin, for 37, read 47.
 362, ditto, & p: 590 T. labia-
 ta r. *labiatus*
 398, l. 23, Aëinea, r. *Aëi-*
 nia
 409, 410, 412, spiculi, r. *spi-*
 cula
 464, margin and p. 597, He-
 lix Nautilus, r. *Nautila*
 482, l. 16, breath r. *breadth*
 492, l. 13, height, r. *height*
 524, l. 9, striata, r. *striatum*
 529, l. 23, Pholas, r. *Pholades*
 532, l. 7, account r. *accunt*
 552, l. 3, anterior, r. *posterior*
 595 Index, omitted *Inæqui-*
 striata Tellina, 567
 597 Membranaceus Helix, r.
 Turbo
 600 Striatum Ostrea r. *Ostreum*
 601 Vulgare Ostrea, r. *Ostreum*

BRITISH SHELLS.

DIV. I. MULTIVALVE.

II. BIVALVE.

III. UNIVALVE.

DIV. I.

MULTIVALVE SHELLS.

GEN. I.

CHITON.

*Animal a DORIS.*

SHELL, constructed of many plates or valves, placed transversely on the back of the animal, and lying upon each other at the anterior edge.

Chiton Marginatus. *Gmel. Syst.* p. 3206. 26.

Br. Zool. t. 36. f. 2.

Pult. Cat. Dorset. p. 25.

Turt. Lin. iv. p. 165.

1.

MARGINATUS.

C. with eight valves carinated along the back, projecting over each other in a point or beak on the dorsal elevation: when viewed with a glass appears like shagreen;

green, marginated: colours various, dusky, cinereous-brown, inclining to flesh-colour, sometimes mottled; shape oblong-oval; length five-eighths of an inch; breadth three-eighths.

This seems to be the shell described by Mr. PENNANT, but we never could observe the margin sufficiently reflected to become a character, or that the edge is more serrated than in most other species. It was originally found at *Scarborough*, by the above author: and Doctor PULTENEY mentions it on the *Dorsetshire* coast.

We have not unfrequently taken it by dredging in *Salcomb bay*, in *Devonshire*, affixed to oysters, and other shells, as well as to stones: have also received it from *Sandwich* in *Kent*.



2.
LÆVIS.

Chiton Lævis. *Gmel. Syst.* p. 3206. 27.
Br. Zool. t. 36. f. 3.
Turt. Lin. iv. p. 165.

C. with eight smooth valves, or very faintly striated transversely: back elevated: valves beaked; margin broad, finely reticulated, oblong; length half an inch, breadth a quarter.

This seems to be the *C. lævis* of Mr. PENNANT, who says it inhabits the shores of *Loch Broom*, in *West Ross-shire*.

DSI

shire. It is usually of a fine deep rufous-brown; sometimes mottled with yellowish-white, with a small line of the same along the back; but this is not a permanent character, as it should seem to be by Mr. PENNANT'S description.

We have frequently found it with the preceding species in *Salcomb bay*, from which it is principally distinguished by not being so broad; in being smooth, and the margin being reticulated.



3.

C. with seven carinated valves, strongly beaked; the SEPTEMVALVIS. five middle ones divided transversely from the anterior base to the beak, the hinder compartment very fine shagreen, the other very smooth, or faintly striated transversely: the extreme valve at each end rufous-brown, the rest generally dark cinereous; beaks frequently rufous; margin moderately broad, and faintly reticulated: shape of the last described: length half an inch. Found in *Salcomb bay*, but rare.



4.

Chiton Cinereus. *Lin. Syst.* p. 1107.—*Gmel. Syst.* p. 3204. CINEREUS.
Pult. Cat. Dorset. p. 25.
Turt. Lin. iv. p. 163.

C. with eight valves nearly smooth, compressed, oval, carinated: the valves projecting into a beak on the back,

B 2.

and

and reflected a little at the posterior angle at the base: margin moderately broad, edge slightly ciliated: colour cinereous: length a quarter of an inch.

Found rarely in *Salcomb bay*, in *Devonshire*, on stones and old shells, like the preceding.

Doct^r PULTENEY says on rocks, and on oysters at *Weymouth*, and from *Poole*.



5.
ALBUS.

Chiton Albus. *Lin. Syst.* p. 1107.—*Gmel. Syst.* p. 3204.
Chem. Conch. viii. t. 96. f. 817.
Pult. Cat. Dorset. p. 25.
Turt. Lin. iv. p. 162.

C. with eight smooth valves, white, oval, not carinated: first valve notched on the hinder edge. Smaller than the *C. cinereus*. Doct^r PULTENEY says upon oyster shells from *Poole*: and on other shells, but less common: also on the *Ulva intestina* and *latissima*.



6.
CRINITUS.

Chiton Crinitus. *Gmel. Syst.* p. 3206.
Br. Zool. t. 36. f. 1.
Turt. Lin. iv. p. 161.

C. with seven valves, thick set with short hairs: five-eighths of an inch long.

Such

Such is Mr. PENNANT's description, who says it inhabits the sea near *Aberdeen*. Mr. BOYS informed us he found it at *Sandwich*.



Chiton Fascicularis. *Lin Syst.* p. 1106.—*Gmel. Syst.* p. 3202. FASCICULARIS.
Chem. Conch. x. t. 173. f. 1688.
Muller. No. 3017.
Pult. Cat. Dorset. p. 25.
Turt. Lin. iv. p. 162.

C. with eight valves, apparently smooth, but when examined with a glass, will be found to be rough like shagreen, except on the elevated dorsal ridge; margin surrounded with tufts of whitish hair, one at the junction of each valve, and two in the front, making eighteen in number; colour brown, or dark cinereous: length five-eighths of an inch, breadth rather more than two-eighths.

Doct^r PULTENEY observes, this shell is not uncommon on oysters from *Poole*. We have found it in considerable abundance in *Salcomb bay* in *Devonshire*, with all the other species except the *albus* and *crinitus*, and is by far the most common; like the rest it adheres to oysters and other shells, as well as to stones; and with them inhabits the deep, so that it is only to be obtained by dredging. It is also found at *Sandwich* in *Kent*, where it seems to be not uncommon; as among a parcel of these shells we received from Mr. BOYS, the greater part were of this species. On the coast of *Barbary* it is of a much superior size, not unfrequently above an inch long.

CEN.


 GEN. II.

BALANUS.


Animal a TRITON.

SHELL, of many erect unequal valves, affixed by a broad base, or sessile.

1.
COMMUNIS.

- 
- Lepas Balanus. *Lin. Syst.* p. 1107.—*Gmel. Syst.* p. 3207.
Turt. Lin. iv. p. 165.
Lister. Conch. t. 443. f. 286.—*Don. Br. Shells.* i. t. 30. f. 1. *Br. Zool.* t. 37. f. 4.
 Lepas Cornubiensis. *Br. Zool.* t. 37. f. 6. var.
 Balanus Porcatus. *Da. Costa.* p. 249.
 Balanus Communis. *Pult. Cat. Dorset.* p. 25.

B. with a strong rugged shell, of a cinereous-brown colour; compartments unequal and frequently indistinct, composed of irregular longitudinal striæ or ridges: of a conic shape, detached shells frequently perfectly round at the base, and regularly sloping upwards: the aperture not large in proportion; operculum of four valves transversely striated, with a longitudinal furrow on the two longest. Diameter at the base, sometimes an inch, height nearly three quarters.

This

This species is not uncommon on many parts of our rocky coasts, to which it adheres so strongly as to render it difficult to separate whole: most commonly in clusters, by which they are distorted into various shapes.



2.

- Lepas Balanoides. *Lin. Syst.* p. 1108.—*Gmel. Syst.* p. 3207. BALANOIDES.
Turt. Lin. iv. 166.—*Br. Zool.* t. 37. f. 5.
Don. Br. Shells. i. t. 36. f. 2. 3.
- Balanus Vulgaris. *Da. Costa.* p. 248. t. 17. f. 7.
Lister: Conch. t. 444. f. 287.
Id. Angl. t. 5. f. 41.
Pult. Cat. Dorset. p. 25.

B. with a sub-conic, and sometimes much depressed shell, usually with six compartments divided by a deep longitudinal furrow, smooth, white, frequently deeply sulcated at the base; the posterior compartments the largest: aperture larger in proportion than in the last species: operculum of four valves; the two upper slightly striated transversely, the others smooth. Diameter at the base, a quarter, rarely half an inch.

This is by far the most plentiful species on all our rocks between high and low water mark, sometimes entirely covering them: it is also found attached to wood, shells, and crustaceous animals.

Balanus

PUNCTATUS.
TAB. 1. F. 5.

Balanus Punctatus. *Pult. Cat. Dorset.* p. 25.

B. with a very rugged brown shell; compartments indistinct; frequently punctured; operculum of four valves, the upper one with a few longitudinal ridges or striæ; the edges of the superior and inferior valves closely united at the top, indented or notched, and lock into each other: these are often punctated like a thimble: the base spreads a very little, and is not much broader than it is high, which does not exceed a quarter of an inch, and usually less. It is a very common species on the South coast of *Devonshire*, covering whole rocks near high water mark; and on the *Patella Vulgata* closely clustered together. This has probably been confounded with the preceding species, but is readily distinguished by its dull brown colour, and rugose appearance, and especially by the *operculum*, which is so essentially different.

A variety considerably more elevated, cylindric, and with the aperture as large as the base is sometimes met with; this has the valves of the operculum more punctated.

The figure is magnified; that of the natural size was accidentally omitted.



4.
RUGOSUS.

Balanus Rugosus. *Pult. Cat. Dorset.* p. 25.
Chem. Conch. viii. t. 97. f. 824.

B. with a sub-cylindric shell, usually divided into six compartments by furrows which become broad towards the
the

the top, where the shell spreads into angulated points, and is frequently as wide as at the base: the compartments are irregular, those on the posterior side broadest; these are sometimes wrinkled or striated longitudinally, others are more smooth, most times white; but a variety is of a purplish red; aperture large, inside margin ridged transversely: *operculum* of four rough valves but not striated, angulated, erect, forming four distinct points a little reflexed. Height from half to three quarters of an inch; diameter at the base usually much less.

A variety of this species with a more extended base, and not so much in height, has frequently been confounded with the *B. Balanoides*: but the breadth of the aperture, angulated margin, and quadrifurcated *operculum* are unerring marks of distinction. We shall here take the opportunity of remarking, that as the greater part of this genus is subject to great variety, and frequently run so much into each other as scarcely to be distinguished by common observation, it is necessary to attend to the *operculum*, which we have hitherto found an unerring guide; at least with respect to the *British* species, which in other respects approach each other in some of their varieties.

For want of that attention to this essential part, so much confusion has arisen, that it is difficult to place the Synonyms to many of this genus.

5.

CLAVATUS.

Balanus Clavatus. *Pult. Cat. Dorset.* p. 25.*Br. Zool.* t. 37. A. 5.Lepas Elongata. *Gmel. Syst.* p. 3213.*Chem. Conch.* viii. t. 98. f. 838.*Ellis. Zooph.* p. 198. t. 15. 7. 8.

B. with a long clavated shell, slender at the base, dilated at the top, and usually cloven into six divisions: the compartments three wide, and three narrow, wrinkled longitudinally, and faintly striated transversely. Length two inches: diameter at the base three-eighths of an inch.

This species we believe is not common on our coast, as we have never been able to procure it alive, or with its *operculum*. Mr. PENNANT has given a figure of it, but suspected it was only a variety of the *Balanoides*.

Doct^r PULTENEY says it has been found in the sea at *Weymouth*, in deep dredging. It is therefore probably a *pelagic* species. This gentleman also informs us, that it was first discovered by SIR JOSEPH BANKS, who brought it from *Newfoundland*: and that in *Iceland* it grows to the length of three inches.



6.

TINTINNABU-
LUM.Lepas Tintinnabulum. *Lin. Syst.* p. 1108.*Gmel. Syst.* p. 3208.*Lister. Conch.* t. 443. f. 285.*Chem. Conch.* viii. t. 97. f. 828 to 831.*Br. Zool.* p. 73. No. 8.*Turt. Lin.* iv. p. 166.

Balanus

Balanus Tintinnabulum. Da. Costa. p. 250.

Palt. Cat. Dorset. p. 25.

B. with a strong shell, usually divided into six raised and six depressed compartments, the former running to a point upwards and striated longitudinally; the latter contracting to a point downwards, and transversely striated: aperture nearly as large as the base, angulated; colour purple. Length an inch and a half, or two inches; breadth rather less.

This species though admitted into *British* Conchology, is scarcely to be called an *English* shell. It is the produce of warm climates, and brought to us on the bottoms of ships, where they are frequently seen adhering in clusters: and of course dead shells are some times found on our shores; but we doubt if they ever breed in this climate.



Lepas Costata. Don. Br. Shells. i. t. 30. f. 2.

Turt. Lin. iv. p. 167.

7.

COSTATUS.

B. with numerous equidistant ribs diverging from the aperture: shape somewhat conic.

Mr. DONOVAN informs us that this species was found by the late T. ADAMS, Esq. of *Pembroke*, adhering to pieces of broken rock, and is in the possession of the Rev.

T. RACKETT, of *Spetisbury, Dorset*. The figure above quoted is about three-eighths of an inch in diameter at the base, nearly round, and of a light colour.



8.

CONOIDES.

Lepas Conoides. *Don. Br. Shells*. i. t. 30. f. 3.
Turt. Lin. iv. p. 167

B. with smooth valves pointed at the apex : aperture very small. Found by Mr. BRYER, affixed to the *Lepas Anatifera*.

This species, which we presume was found at *Weymouth*, is described as above by Mr. DONOVAN : the figure given is about three-eighths of an inch diameter at the base, of a conic shape ; the compartments appear to be six, divided at the top ; the three posterior ones larger than the others ; and all striated longitudinally, and slightly transversely ; giving it a reticulated appearance : colour purplish.



9.

STRIATUS.

Lepas Striata. *Br. Zool.* t. 38. f. 7.
Chem. Conch. viii. t. 98. f. 834.
Walker's Min. Shells. f. 87.
Lepas Verruca. *Gmel. Syst.* p. 3212. 17.
Balanus Intertextus. *Pult. Cat. Dorset.* p. 25.
Lepas Intertexta. *Don. Br. Shells* i. t. 36. f. 1. *Turt. Lin.*
iv. p. 166.
Balanus Striatus. *Da. Costa.* p. 250.

B. with

B. with a compressed white shell, with the compartments strongly ribbed in an oblique direction to each other, and finely striated across the ribs: the margin of the base irregularly serrated: aperture oblique, perfectly closed by an *operculum*, and so obscured that it is difficult to find, except when alive. Diameter a quarter of an inch, rarely so much.

This singular and curious species, was first publicly noticed by Mr. PENNANT as an *English* shell, from the *Portland* Cabinet. Doctor PULTENEY says, he has seen it common on *oysters*, but more frequently on the *Ostrea Opercularis*, both from *Weymouth* and from *Poole*.

We have found it not uncommon upon various shells on the South coast of *Devon*, particularly in *Salcomb bay*; and sometimes in clusters on the roots of *algæ*.

It is not uncommon on the coast of *Sandwich* in *Kent*, from whence we have received it; and Mr. WALKER observes it is found on the roots of *Sea-weeds*; the finest specimens on *lobsters*.



10.

Lepas Diadema. *Lin. Syst.* p. 1198.—*Gmel. Syst.* p. 3208. DIADEMA.
Chem. Conch. viii. t. 99. f. 843. 844.
Lister. Conch. t. 445. f. 288.
Gualt. t. 106. f. Q.
Ph. Transf. 1758. pt. 2d. t. 34. f. 1.

Lepas

Lepas Diadema. *Don. Br. Shells.* ii. t. 56. f. 1. 2.

Turt. Lin. iv. p. 166.

Balanus Balæna. *Da. Costa.* p. 251. t. 17. f. 2. 2. 2.

B. with a sub-compressed hemispheric shell, with twelve compartments; six depressed flat and striated transversely; the others which are alternate are prominent, with four, five, or six elevated longitudinal ridges, and transverse striæ; at the top is a deep cavity, funnel-shaped, hexagonal within, at the bottom of which is the aperture: the ribs are also furnished with openings at their summit: the base is concave, furnished with divisions or cells in a radiated manner: in live shells this part is covered with a tough coriaceous membrane. It is usually of a dirty-white colour, an inch in height, and two or three inches diameter towards the base; but commonly not half so large.

The animal figured by Mr. ELLIS in the *Philosophical Transactions* resembles a cluster of small hooded serpents, issuing from the aperture and openings on the top of the ribs.

This species is rarely found in the Southern parts of this Kingdom, but is often met with on the shores of *Scotland* and the islands contiguous.

It appears to inhabit some species of *Whale*, by which it is said that the natives of the Northern parts distinguish one kind from the rest.

Whether this is really distinct from the *Balanus Balænaris*, which is found adhering to the pectoral wrinkles of the *Balæna Boops* is doubtful.

GEN.


 GEN. III.

LEPAS.


Animal a TRITON.

SHELL, with several unequal plates or valves connected by cartilages; affixed by a tubular fleshy peduncle.

- 
- 1.
- Lepas Anatifera. *Lin. Syst.* p. 1109.—*Gmel. Syst.* p. 3211. ANATIFERA.
Chem. Conch. viii. t. 100. f. 853. 855.
Lister. Conch. t. 439. f. 282.
Br. Zool. t. 38. f. 9.
Pult. Cat. Dorset. p. 26.
Don. Br. Shells. i. t. 7.
Turt. Lin. iv. p. 169.
 Balanus Anatiferus. *Da. Costa.* p. 253. t. 17. f. 3.

L. with a compressed shell of five valves, the two lower ones large and somewhat of a triangular shape, longitudinally wrinkled, and obsoletely striated in a radiated manner from the lower anterior angle; the two superior valves long and tapering downwards to an obtuse point, the upper part angulated on each side, top rounded: these are also

also faintly wrinkled longitudinally, and obsoletely striated from the upper posterior angle in a radiated manner. The dorsal valve is long slender and rounded, smooth down the middle, and fulcated on each side; the cartilages that connect the valves, and the peduncle at the base are usually of a reddish-orange colour. Length an inch and a half, and sometimes more, breadth of the largest part an inch: colour blueish-white, and glossy.

This species is frequently found adhering to the bottom of ships in great quantity, clustered together of all sizes, the smaller ones adhering by short pedicles to the larger. It particularly attaches itself to wood; pieces of timber are not uncommonly thrown upon our shores covered with them: we observed one of *fir* above twenty feet long, drifted on the coast of *Devonshire*, that was completely covered with *Bernacles*.

This is the shell which was formerly supposed to produce the *Bernacle Goose*, a curious account of which may be seen in *Gerarde's Herbal*.

2.

ANSERIFERA.



Lepas Anserifera. *Lin. Syst.* p. 1109.—*Gmel. Syst.* p. 3210.
Chem. Conch. viii. t. 100. f. 856.
Gualt. t. 106. f. 2. 3.
Lister. Conch. t. 440. f. 283.
Turt. Lin. iv. p. 166.

L. with a compressed shell of five valves, much resembling the preceding species, but is readily distinguished

guished from it by being strongly striated in a radiated manner, the inferior valve from the lower anterior angle, and the superior one from the upper posterior margin; these are crossed by very fine striæ, which give a faint reticulated appearance: the angles of the valves are much more sharp and pointed, and particularly the apex: the dorsal valve is compressed at the sides, and brought to a fine carinated edge, whereas in the other it is rounded, and only sub-carinated down the middle: This is a remarkable character, and sufficient to discriminate the shell if all others were wanting: the superior valves are also much more compressed, which makes the shell extremely thin or flat on the posterior side. Length one inch: breadth not quite three quarters: colour bluish-white.

This species is rarely found with the former; we have taken it from a piece of drifted wood on the south coast of *Devonshire*, from half an inch in length to the size before mentioned; the connecting cartilages and pedicle bright orange-red.



S.

L. with a compressed sub-triangular shell of five valves, *SULCATA*. the inferior ones wrought with fifteen strong ribs diverging from the lower anterior angle; that which runs along the front is larger than the rest, and forms a margin; the two superior valves form a pointed apex, and narrow downwards to a point, furnished with seven or eight ribs

D

with

with smaller intermediate ones, diverging from the posterior margin; the dorsal valve somewhat compressed, and strongly striated longitudinally, with a smooth sub-carinated edge. Length a quarter of an inch, breadth nearly as much: colour dirty-white: pedicle short, dusky: shape somewhat like the last, but shorter and more triangulated. This new and elegant species we found on *Gorgonia Flabellum* on the *Dorsetshire* coast near *Portland Island*: the few that were on it were detached, not in clusters; some not half as large as that described.

A figure of the natural size was accidentally omitted.



4.

SCALPELLUM.
TAB. 1. f. 4.

Lepas Scalpellum. *Lin. Syst.* p. 1109.—*Gmel. Syst.* p. 3210. 11.
Chem. Conch. viii. vig. 17. f. *A.* and *a.*
Lister. Conch. t. 439. f. 281.
Gualt. t. 106. f. C.
Ph. Transf. 1758. vol. 2. t. 34. f. 4. (*Ellis.*)
Turt. Lin. iv. p. 168.

L. with thirteen valves of a light brown colour, not polished, but rather rough without any striæ; faintly wrinkled in some parts, and covered with short hairs; those on the dorsal valve set in series or rows transversely: the three lower valves on each side, to which the peduncle is fixed, are very small; the two next larger; the superior one the largest, running a little oblique to the rest, and is pointed at the top: the dorsal valve is compressed,
the

the edge rounded at the base and runs into a sharp process about half way up; from whence it turns in a diagonal line to cover the edge of the two superior valves: the whole shell is much compressed; the anterior and posterior sides are nearly parallel to each other for rather more than half way from the base; the upper part is truncated obliquely to the front; the apex turns a little backward.

The peduncle is large in proportion, cylindric, composed of many annulations of the same colour as the shell; is nearly of the same length, and covered with short hairs.

This species is rarely above five-eighths of an inch long independent of the peduncle; and three-eighths broad. It is a rare shell, and seldom met with on our coast.

We first received it from Mr. BOYS of *Sandwich*, and since found it on a species of *Gorgonia*, to which it seems to be particularly attached. CHEMNITZ mentions the same circumstance. Hitherto it has been only known as a production of the *Norwegian* seas, and even there accounted extremely rare. Ours were taken off *Plymouth* by trawling.

GEN. IV.

PHOLAS.

Animal an ASCIDIA.

SHELL, with two large valves open at each end, with smaller accessory valves or plates at, or near the hinge.

Hinge, folded back, united by a cartilage; tooth single in each valve beneath the hinge, long, incurvated.

1.

DACTYLUS.

- Pholas Dactylus. *Lin. Syst.* p. 1110. 20.
Gmel. Syst. p. 3214. 1.—*Turt. Lin.* iv.
 p. 172.
Chem. Conch. viii. t. 101. f. 859.
Lister. Conch. t. 433. f. 276.
Id. Anat. t. 19. f. 1. 2.—*Br. Zool.* t. 39. f. 10.
 Pholas Muricatus. *Da. Costa.* p. 244. t. 16. f. 2. 2.
 Pholas Hians. *Pult. Cat. Dorset.* p. 26.
Borlase Corn. t. 28. f. 31.

P. with a rough shell striated transversely, and slightly longitudinally, or from the hinge; the anterior end strongly

strongly muricated, extending into a beak, forming a large *rictus* or gape.

Hinge reflexed and forms several cells on the back, which are covered with two striated valves connected longitudinally; below the hinge another long plate-like valve affixed to the connecting membrane: teeth, one in each valve projecting inwards; long, curved, flat: colour white. Length an inch and a quarter: breadth sometimes as much as four inches.

This shell has been considered by some as distinct from the *Dactylus* of LINNÆUS: GMELIN however has quoted the figure of CHEMNITZ and LISTER which is evidently this shell.

The *Pholades* are all *Borers*: this is frequently found in hard clay, marl, and wood: the largest we ever saw was on the north shore at *Poole*. It is not uncommon on many parts of our coast from east to west: and we have picked it up of a large size on the sands of *Cacrumarthenshire*.

At *Salcomb* on the coast of *South Devon*, it is found in great abundance together with the *P. Candidus* and *Parvus* burrowed in the stumps of old trees, which formerly grew there, but now covered with the tide except at very low water. These are taken by the fishermen and used with success for baiting their hooks.

2.

PARVUS.

Pholas Parvus. *Br. Zool.* t. 4. f. 13.

TAB. 1. f. 7. 8.

Da Costa. p. 247.

P with a rough white shell transversely and longitudinally striated, except at the smaller end; the larger end declines into a kind of beak, where it is muricated: hinge reflex without cells: plate at the back one, connected by a membrane to the valves; no accessory plate below the hinge; teeth, one in each valve, slender, curved, furnished with a knob at their base. Length half an inch; breadth one inch.

This species was originally given by Mr. PENNANT, but has ever since been confounded with the *Dactylus* and *Crispatus*.

From the former it may be readily known by not having any cells on the reflected margin of the hinge; from the latter in not having the longitudinal furrow; and from both by the knob at the base of the tooth.

It is longer in proportion to its breadth than the *Dactylus*, and shorter than the *Crispatus*.

If this should be the shell described in the *British Zoology* of which we can but little doubt, it is unfortunate that the essential characters were omitted, especially as it is stated to be like the *Crispatus* externally, but never found larger than a hazel nut. From this circumstance probably

probably DA COSTA was led to believe it was no other than the young of that shell.

In this state of uncertainty we are rather inclined to give credit to so able a naturalist, than to add ours as a new species, with a greater probability of its being the same. The *Parvus* seems to be a very local species: is found in great abundance in decayed wood, below the town of *Salcomb* on the coast of *South Devon*, the only place we ever met with it: and where the *Crispatus* is never found, but the *Dactylus* and *Candidus* equally plentiful. The *Pholades* are all slightly connected at the hinge, and rarely found perfect except when alive, as the accessory valves soon separate. In a live state these smaller valves or plates are evident and distinguishing characters.



Pholas Crispata. *Lin. Syst.* p. 1111. 25.

Gmel. Syst. p. 3216. 6.

Chem. Conch. viii. t. 102. f. 872. to 874.

Don. Br. Shells. ii. t. 62.

Pult. Cat. Dorset. p. 27.

Turt. Lin. iv. p. 173.

Pholas Crispatus. *Br. Zool.* t. 40. f. 12.

Pholas Bifrons. *Da. Costa.* p. 242. t. 16. f. 4. 4.

Lister. Conch. t. 436. f. 279. & t. *Anat.* 19. f. 3.

Id. Angl. t. 5. f. 38.

Pholas Parvus. *Don. Br. Shells.* ii. t. 69. young.

6.

CRISPATUS.

P. with a strong, gibbous, opaque shell, sub-oval, obtuse, and very open at both ends: transversely striated; half the

the shell reticulated, and separated from the plain side by a broad furrow down the middle, extending from the *umbo* or beak to the opposite margin: hinge reflex, smooth, forming a cavity or furrow at the anterior end: this end is truncated obliquely to the front margin, which forms a sort of beak or angle at the end next to the hinge.

Inside smooth, glossy; an elevation across the middle caused by the furrow on the outside: tooth long, flat, much curved; colour whitish, or tinged ferruginous. Length sometimes, nearly two inches; breadth above three, but more commonly much less.

This species is found on various parts of our coast, burrowed in clay or lime-stone; but sparingly on the western shores, and those small and dead specimens; indeed we believe it is no where plentiful of a large size.

DONOVAN has figured the young of this species for the *Pholas Parvus*, but has followed DA COSTA in expressing a doubt of its being distinct from the *Crispata*. Had these authors ever seen the true *Parvus* such doubts never could have arisen.



4.
CANDIDUS.

Pholas Candidus. *Lin. Syst.* p. 1111. 23.—*Gmel Syst.* p. 3215. 4.

Chem. Conch. viii. t. 101. f. 861. 862.

Lister. Conch. t. 435. f. 278.—*Id. Ang.* t. 5. f. 39.

Pholas

Pholas Candida. *Pult. Cat. Dorset.* p. 26.—*Turt. Lin.* iv.
p. 173.

Pholas Candidus. *Br. Zool.* t. 39. f. 11.
Da Costa. p. 246.

P. with a thin, fragile, semipellucid, oblong, yellowish-white shell, rounded at both ends; striated transversely, crossed by finer striæ in a radiated manner from the *umbo*: a few of the radii at the larger end muricated, or set with short spines: hinge reflected, smooth, forming a *sinus* at the back: accessory valve one at the hinge, none on the connecting membrane below the hinge. Inside smooth, glossy-white: tooth in each valve slender, incurvated, above which on the margin of one valve is an erect tooth-like process. Length three-quarters of an inch; breadth two inches.

This appears to be a very local species on our coasts.

DA COSTA certainly could never have examined a perfect specimen of this shell, or he would not have expressed a doubt of its being a distinct species. If every other character was wanting, the erect tooth-like process is sufficient to discriminate it; but it is also readily distinguished from all the preceding species, by the valves shutting close at the larger end.

LISTER met with it at the mouth of the river *Tees*, but says it is scarce. DOCTOR PULTENEY speaks of it as a shell of the *Dorsetshire* coast.

E

We

We have only found it alive at *Salcomb* on the south coast of *Devonshire*, where it is sufficiently plentiful in decayed wood at low-water mark, in company with the *Dactylus* and *Parvus*.



3.
STRIATUS.

Pholas Striata. *Lin. Syst.* p. 1111.

Gmel. Syst. p. 3215. 3.—*Turt. Lin.* iv. p. 172.

Chem. Conch. viii. t. 102. f. 864. 866.

Pholas Nanus. *Pult. Cat. Dorset.* p. 27.

Pholas Conoides. *Phil. Trans.* lv. p. 1. t. 1.

P. with a conoid white shell, the larger end strongly reticulated, the rest irregularly striated: at the front margin the lip seems to fold back, and forms a smooth surface on the reticulated part: the plate or shield at the hinge is large, of a sub-oval shape, beneath which is a narrow plate joined to the membrane which connects the valves: in the front is another narrow plate and membrane, which seems to prevent the shell from opening, except at the ends: at the smaller end it gapes considerably, the larger end nearly closed: tooth long, slender, and much curved. Length half an inch, breadth three-quarters.

Whether this species can strictly be said to be *English* may be doubted; it is however not uncommonly found burrowed in the planks at the bottoms of ships, returned from

from the *Mediterranean*, and probably other southern latitudes.

Whether it has bred in our seas and become naturalized, is not ascertained. In a piece of timber now before us, perforated by this and the *Teredo Navalis*, it is remarkable how effectually they destroy the planks of a ship by their conjoint actions: the *Pholas* perforates the wood across the grain, while the *Teredo* insinuates itself with the grain in all directions.

DIV. II.

BIVALVE SHELLS.

GEN. V.

MYA.

*Animal an ASCIDIA.*

SHELL, most commonly gaping at one end.

Hinge, for the most part furnished with a strong, thick, and broad tooth not inserted into the opposite valve.



1.

PHOLADIA.

Mya Dubia. *Br. Zool.* t. 44. f. 19.—*Turt. Lin.* iv. p. 179.Chama Parva. *Da. Costa.* p. 234.Pholas Faba. *Pult. Cat. Dorset.* p. 27.

M. with a thin, brittle, opaque shell, of a light colour, and oval shape, marked with fine concentric striæ: the beak is small, but prominent, placed at one end: the valves, when

when shut, have a large oval gape or opening in front, opposite the hinge. Inside white: hinge furnished with a small plate, or rudiment of a tooth, projecting inwards.

There seems to have been various opinions, with respect to the class in which this shell should be placed.

Mr. PENNANT, who first gave it to the public, met with it in the *Portland* Cabinet; and seemed to be doubtful with regard to the genus in which it ought to be placed, by the trivial name of *Dubia* he affixed to it.

DA COSTA has placed it with his *Chama*, which consists chiefly of *Linnæan Myæ*. Doctor PULTENEY has made it a *Pholas*; we presume under the authority of Doctor SOLANDER. It does not however appear that there ever were sufficient grounds for placing it in the *Pholas* genus. Even Doctor PULTENEY himself remarks, that he has seen several of these shells, but had not seen one with the accessory valves, the essential part of the character of that genus.

Mr. PENNANT and DA COSTA mention its possessing a tooth, or the rudiment of one. This circumstance perhaps has more inclined us to fix it in the *Mya* genus; others may perhaps hereafter remove it to the *Mytilus*; for the small elevation of the hinge is scarcely to be denominated a tooth.

In its general habits, it certainly appears very nearly allied to the *Pholades*, but the want of the accessory valves forbids its being placed in that class: though, if we admit of the existence of a tooth, it is the link that connects the *Pholas* and *Mya*. This hitherto seems only to have been found at *Weymouth*, or on the *Dorset* coast, by those who have described it. We have found it not uncommon on the *Devonshire* coast, at *Torbay* and at *Plymouth*, burrowed in detached pieces of lime-stone; but always dead shells, though in good condition. It rarely exceeds three-quarters of an inch in length; and is frequently tinged with rufous-brown.



2.

ARENARIA.

- Mya Arenaria.* *Lin. Syst.* p. 1112.
Gmel. Syst. p. 3218: 2.
Br. Zool. t. 42. f. 16.
Chem. Conch. vi. t. 1. f. 3. 4.
Turt. Lin. iv. p. 175.—*Don. Br. Shells.* iii.
 t. 85.
Chama Arenaria. *Da. Costa.* p. 232.

M. with an oval shell, moderately concave, generally of a rugged appearance, but some are more smooth with numerous small concentric striae; in such the shells are not so thick and strong as in the more rugose variety: the hinge is not very remote from the centre, but nearest the larger end: the *umbo* is rather prominent: one valve furnished with a broad, thick, erect tooth, by which it is joined to the

the other or toothless valve, by the connecting cartilage. Inside white, glossy. This species is a *gaper*, the smaller end is incapable of closing, and reflects outwards, particularly in that valve which has the tooth.

It may be rather considered as a local, but not a scarce shell. DA COSTA mentions having received it from *Kent*, and the *Isle of Wight*. We have received it also from *Kent* and from *Portsmouth*, and have seen it in great abundance in the gravelly parts of the shores of *Southampton* river, at low water, buried at the depth of six or seven inches, with the gaping end upwards; and so strongly wedged in by the shingle, that it is difficult to get them up without a pointed iron instrument.

In this situation the shells are always very rugged, but those which are found in sand are more smooth and regularly grown, and covered with a brown epidermis, which being removed the shell is white: those of a rusty or blackish colour are only stained by the mud or ochraceous clay. The fishermen about *Southampton* call them *old-maids*, and sometimes collect them for food. They are discovered by a small hole on the surface, through which they eject a quantity of water if pressed. The common size is about three inches wide; sometimes though rarely above four; and two inches and a half long from hinge to margin.

Mya

3.

TRUNCATA.

- Mya Truncata. *Lin. Syst.* p. 1112.
Gmel. Syst. p. 3217. 1.
Br. Zool. t. 41. f. 14.—*Turt. Lin.* iv.
 p. 174.
Pult. Cat. Dorset. p. 27.—*Don. Br. Shells.*
 iii. t. 92.
Lister. Conch. t. 428. f. 269.—*Id. Angl.*
 t. 5. f. 36.
Chem. Conch. vi. t. 1. f. 1. 2.
 Chama Truncata. *Da Costa.* p. 233. t. 16. f. 1.

M. with a sub-oval shell, truncated at the smaller end, where it gapes considerably more than the *Arenaria*: it is wrought with concentric wrinkles, covered with a yellow tough epidermis, extending half an inch or more beyond the open end, like a thick membrane, through which the animal extends itself: the valves are very concave and reflect at the smaller end; the tooth like the preceding species, very broad and erect. Inside white.

This species is found lodged under gravel near low-water mark, on some of our coasts; but dead shells are more frequently found with the epidermis worn off: in that state they are nearly white, or tinged with yellow. In this country it seems to be extended from *South* to *North*, as it is said to be found in the *Orknies*: we are also informed that in *Greenland* it is the food of man, and other animals.

We

We have taken it alive on the coast of *Devonshire* measuring two inches and a half in length, and three inches and a half in breadth. In this state the epidermis of the shell joins to the tube or proboscis of the animal, and becomes on that part a tough, thick, dark-coloured, coriaceous skin for its protection: and is greatly wrinkled when contracted.

The animal is capable of extending this tube to the distance of nine or ten inches, and of contracting it to about three, but cannot withdraw it into the shell.



- Mya margaritifera.* *Lin. Syst.* p. 1112.
Gmel. Syst. p. 3219.
Br. Zool. t. 48. f. 18.
Du. Coq. p. 225. t. 15. f. 3.
Lisler. Conch. t. 149. 4.—*Id. Angl. app.*
 t. 1. f. 1.—*Shroct. Fluscon.* t. 4. f. 1.
Chem. Conch. vi. t. 1. f. 5.
Turt. Lin. iv. p. 176.

4.
 MARGARITI-
 FERA.

M. with a thick, strong, ovate-oblong shell, somewhat indented or arcuated opposite the hinge; covered with a black epidermis: rugged and decorticated, particularly about the *umbo*, and frequently perforated with small round holes. Inside of a greenish pearly hue: sometimes of a deep bronze all over, or only in patches on the elevated parts; for the inside is frequently rugged and worn,

as if the animal was constantly throwing off part of its shell, both externally and internally. Teeth strong; in one valve a single tooth, locking into a bifurcated tooth in the opposite valve. Length two inches and a half, breadth five inches.

Inhabits only the rapid rivers, particularly those of the most mountainous parts, and rocky torrents: not uncommon in the northern parts, and in *Wales*: is also common in the rivers of *Devonshire*, which take their source from the mountains of *Dartmoor*, particularly the *Aun* or *Avon*.

This species has long been famous for producing *pearls*, of a good colour, and of considerable size: and was formerly sought after for that purpose. *Conway* was noted for them: and we are informed by CAMDEN that Sir JOHN HAWKINS had a patent for fishing them in the river *Irt*, in *Cumberland*.

5.

OVALIS.

Mya Ovalis. *Pult. Cat. Dorset.* p. 27.

Mya Pictorum. *Br. Zool.* t. 43. f. 17.

Lifter. Conch. t. 146. f. 1.—t. 147. f. 2. 3.

Id. Angl. t. 2. 30.

Da Costa. p. 228 t. 15 f. 4.—*Don. Br. Shells.*

iii. t. 89.—*Shroct. Fluscon.* t. 3. f. 2. 3.

M. with a strong oval shell, of a dusky-green colour, almost black at the smaller end, marked with several concentric

centric wrinkles; *umbo* placed near to the larger end: hinge furnished with one tooth, which locks into a bifurcated tooth in the opposite valve; these are strong and crenated; besides which it has lateral laminae, two in one valve, and one in the other. Inside pearlaceous: Length sometimes near two inches; breadth four. A variety is frequently found of an olive-green, thin and semipellucid, with a few faint radiated striæ from the *umbo*: the teeth not near so strong, and the inside resplendent like mother-of-pearl.

This variety has been considered by some as a distinct species: but as they are to be found in all gradations in substance and colour, such must be considered as varieties only. The thin shells, and those which are covered with a green or yellowish epidermis, are most commonly found in *ponds*; whereas the dark and strong shells inhabit *rivers*.

This species has been described and figured by many authors for the *M. Pictorum* of LINNÆUS. DOCTOR PULTENEY considers it perfectly distinct from that shell, and indeed we cannot but assent to his opinion. It is most probable LINNÆUS was not acquainted with this species: and GMELIN has certainly confounded the two, if we may judge from his synonyms, for he has quoted both LISTER and CHEMNITZ for the *Pictorum*, whereas the former has not given a figure of that shell, but evidently two varieties of this; the latter has figured the true *Pictorum*.

The *ovalis* and *margaritifera* rarely if ever inhabit the same waters; this being found only in the slow rivers, and never in rapid torrents.

The large and thick variety has, we understand, been also separated by some conchologists, and called *Mya solida*; but certainly without foundation; for there is no leading character of distinction; the shape, hinge, teeth, and every other part is the same; and the only difference is in the substance of the shell, a circumstance not alone sufficient to admit of its being a distinct species.

This very strong variety is not uncommon in the *Avon*, that runs through the north of *Wiltshire* and *Somersetshire*, inhabiting the deeper parts of the river.



6.
PICTORUM.

- Mya Pictorum.* *Lin. Syst.* p. 1112.
Gmel Syst. p. 3218.
Chem. Conch. vi. t. 1. f. 6.
Turt. Lin. iv. p. 175.
Shroet. Flusscon. t. 3. f. 2. t. 3. f. 45.—t. 4. f. 6.

M. with a sub-oval, sub-arcuated shell, moderately thin, of an olive-green colour, sometimes darker at one end, inclining to dusky; wrought with concentric wrinkles: beak or *umbo* placed near to one side; hinge nearly straight, from which it declines alike to both ends, which are equally rounded: the front margin either straight or a little indented. Inside glossy, smooth, pearly; in each valve

valve a single broad crenated tooth, with two lateral laminae in one valve and one in the opposite, locking into each other.

This shell is not very unlike the *ovalis* in the form and structure of the teeth, but very essentially in shape and size. Doctor PULTENEY in his Catalogue of *Dorsetshire* shells, does not consider the *Mya Pictorum* of LINNÆUS as an *English* shell; and at our request favoured us with foreign specimens of what is considered the *Linnæan Pictorum*, which were in every respect like our shell. It seems that Doctor SOLANDER considered this as the true *Pictorum*, but not found in *England*; and named the *ovalis* as a distinct species in the *Portland* Museum. We believe this is a rare, or at least a very local shell in *England*; it is however not uncommon in the river *Kennet*, above the town of *Newbury* in *Berkshire*, where we discovered it, but have never found it in any other place. It is common in *Holland* and many other parts of the Continent, and is generally used by painters for holding their colours, whence the name.

The *ovalis*, which is common in most parts of this kingdom, is used for the same purpose, but greatly exceeds the *Pictorum* in size, which seldom is more than an inch from the hinge to the opposite margin, and an inch and three-quarters wide.

7.

ANEQUEVALVIS. *Cardium striatum apicibus reflexis.* *Walk. Min. Shells.* fig. 85.

M. with a sub-triangular, strong, thick, opaque, white shell, frequently covered with a brown epidermis ; under-valve deep ; beak central, prominent, standing high above the hinge, furnished with one strong, erect tooth somewhat recurved : Inside smooth, the margin appearing as if ground to an edge.

Upper valve not half the size of the other, smooth, but radiated with a few obsolete striæ from the beak ; at the hinge a notch to receive the tooth of the opposite valve. When closed the margin of the under valve projects considerably.

The singular formation of this shell is not well defined by WALKER, possibly he had never seen the perfect shell : indeed the superior valve might readily be mistaken for a distinct species : he has also erred in making it a *Cardium*.

This shell is by no means uncommon ; but rarely to be obtained alive, or with connected valves ; we have found it on the coasts of *Cornwall* and *Devonshire*, and in a living state dredged from *Salcomb-bay*. Mr. BOYS favoured us with the under-valve from *Sandwich* for WALKER'S shell here quoted. Diameter rarely above three-eighths of an inch.

M. with

M. with a sub-pellucid, sub-orbicular shell, of a yellowish-white colour, frequently covered with a brown epidermis; faintly striated transversely, somewhat glossy; margin opposite the hinge nearly straight; sides nearly equal, rounded: hinge central: beak small, pointed, turning to one side: in one valve a single tooth immediately under the beak, locking into a double one in the opposite valve; with a laminated tooth behind the beak in each, somewhat remote. Inside glossy-white: valves shut close. Length rather exceeding three-eighths of an inch; breadth half an inch.

We first discovered this species in hard lime-stone at *Plymouth*, fragments of which were thrown upon the beach perforated in all directions; the entrance of these excavations were much smaller than the shell, so that it must have entered in a younger state; and from which it never could recede. It is sometimes dredged up in *Salcomb-bay*, detached from any other substance, so that it does not seem to be a *Borer* in all situations; perhaps it does not enter any thing but lime-stone, which is not to be found in this last place.

This shell is so much like the *Cardium corneum* in shape, that it might readily be mistaken for a variety, except attention is paid to the hinge, and that this is marine, whereas the other is only found in fresh-water. A variety is highly glossed, with a resplendent pearly hue.

Mya pubescens. *Pult. Cat. Dorset.* p. 27.

Mya declivis. *Br. Zool.* No. 15?

Turt. Lin. iv. p. 175.

Don. Br. Shells. iii. t. 82.

M. with a very thin brittle, oval, white, shell, truncated at the smaller end: in the larger specimens the outside appears, through a magnifier, somewhat like flaggreen, and is very rough to the touch; slightly striated concentrically: behind the cartilage slope one valve turns upwards in a singular manner, and embraces the edge of the other valve: the beak is nearly central, pointed, and turns a little sideways: hinge furnished with one broad tooth-like plate projecting inwards in each valve, to which the connecting cartilage is fixed. Inside white and glossy. In young shells the teeth are not very conspicuous, nor the outside so rough.

This species is not uncommon, of a small size, taken up with sand from *Falmouth Harbour*: sometimes met with on the *Devonshire* coast; one we received from *Plymouth*, taken by dredging was two inches broad, and one inch and a quarter long. DOCTOR PULTENEY (who says this shell was first noticed by the late *Dutchess Dowager of Portland*) speaks of having seen it two inches and a half long, and three inches and three-quarters wide: dredged up at *Weymouth*.

We have reason to believe the full grown shell of this species is the *Mya declivis* of Mr. PENNANT, which he describes to be frequent about the *Hebrides*, and that the fish is eaten by the gentry. The figure given by the same author for *Tellina fragilis* t. 47. f. 26. is so extremely like in shape to the smaller shells of the *M. pubescens*, that we should not have had the least doubt of its being the same, had it not been placed with the *Tellens*; the description too, answers so well to our shell, that we are almost inclined to think the hinge might not have been strictly attended to; and certainly it is not the *T. fragilis* of LINNÆUS.

DOCTOR PULTENEY likens the *T. fragilis* of the *British Zoology* to the *Mya prætenuis*; but that shell is never so much truncated as the figure given in that work; whereas the *M. pubescens* is always of that form.

In the broad tooth of the larger specimens of this shell, is a small process or denticle, which is not observable in younger ones.



Mya prætenuis. *Pult. Cat. Dorset.* p. 23.

Chama prætenuis. *Petiv. Gaz.* t. 94. 4.

10.

PRÆTENUIS.

TAB. 1. f. 2.

M. with an oval, thin, brittle, flat shell, of a whitish colour, marked with a few fine concentric striæ; *umbo* very small, pointed, turned to one side, but placed
 G nearly

nearly central; valves not capable of closing at the smaller end. Inside white: a broad tooth in each valve hollowed in the middle, projecting horizontally inwards; the teeth when closed cover each other, and by which they are held together by the connecting cartilage. Length above half an inch, breadth one inch.

We are informed that PETIVER received his shell from *Poole*. It has been called *White Spoon-hinge*, from the tooth resembling the bowl of a spoon. DOCTOR PULTENEY mentions having found it on the *North* shore near *Brownsea Isle*, and on the shore between *Weymouth* and *Portland*; and remarks with some doubt whether it is not the young of the *pubescens*.

We have no doubt of its being perfectly distinct, and conceive if the Doctor had met with the young of the *pubescens* to have compared, such doubts would never have existed.

This shell is not truncated, is much more flat, and has not that singular flexure of the dexter valve; besides which the tooth is essentially different.

It is not uncommonly dredged from *Falmouth Harbour*, but mostly single valves: is also found on the *South* coast of *Devon*, where we have taken perfect shells.



11.

DISTORTA.

TAB. 1. f. 1.

M. With a sub-pellucid, thin, fragile, white shell, rugged and distorted into various shapes: the valves are
convex

convex, mostly of a sub-oval form; but rises high at the *umbo*, where it projects beyond the margin or *commiffure*; the beak is small, placed nearly central, and does not turn to either side. In the broader specimens the hinge is placed nearer to the larger end; such are not in general so uneven and rugose as those of a more sub-orbicular shape; but all are more or less sinuous and indented at the margin. Inside white: hinge furnished with a broad sub-triangular tooth in each valve, hollowed in the middle, projecting horizontally inwards, much like the *pubescens*: these teeth, like the two preceding species, cover each other when closed, and by which the valves are connected with a cartilage. This shell, which has something of the habit of the two preceding species, is much more convex than the *prætenuis*, and the tooth not so long and rounded; it differs also from the *pubescens* in the shape of the tooth, and in not being truncated; and from both in its rugged and distorted shape.

We first noticed this species at *Falmouth*, amongst the sand dredged from the harbour for manure, and have since found it lodged in hard lime-stone at *Plymouth*, into which it had bored like the *Pholas*; probably the occasion of its distorted growth. It is also found on other parts of the coast of *South Devon*, but not plentiful.

The largest specimen we have met with is not above three-quarters of an inch long and an inch wide; others are as long as they are broad. This and the two pre-

eeding species though perhaps not strictly belonging to the *Mya* genus, cannot be placed with more advantage in any other of the *Linnaean* genera. DOCTOR PULTENEY informs us, that had DOCTOR SOLANDER lived to finish his systematic description of the *Portland* Cabinet, it was his intention to have constituted a new genus, in which the *Mya pubescens* and *prætenuis* together with the *Solen bullatus* and other shells in that Cabinet, were to have been included.

Had such a new genus been formed, this species would doubtless have been placed in it; but we did not think ourselves warranted to make such an addition in a work professedly local, for the sake of one or two species.



12.

BIDENTATA.

M. with a sub-oval, thin, compressed, dirty-white shell, destitute of striæ or markings of any kind, but not glossy: most times covered with extraneous matter that gives it a roughish appearance: *umbo* small, placed near to one end, a little reclined.

Inside smooth without any tongue or *cicatrix*: hinge with two broad erect laminated teeth in one valve, none in the other; these are placed each standing obliquely outwards from the beak, and not very close together; and between them immediately under the beak is a slight cavity for the connecting cartilage.

Length one eighth of an inch, rather more in breadth.

We

We have seen this shell not uncommon, burrowed in old thick oyster shells from *Salcomb bay*, and have reason to believe it to be partly the cause of those small round perforations so frequently observed on that shell.

The hinge of this species does not strictly belong to any one of the present genera in conchology ; the teeth though large, and stand very high in proportion, have not the appearance of what are usually termed *primary* ; they are broad, flat, more than usually distant from central teeth, and equally diverge. The opposite valve is destitute of either *primary* or lateral teeth and has only a slight cavity under the beak.

Whether this shell grows to a larger size remains to be discovered : those we have found are commonly less than above described. That it is perfectly distinct from any thing we are acquainted with there is no doubt ; and as it seems more nearly allied to the *Mya* genus than to any other, it is there placed for the present.

GEN. VI.

SOLEN.

Animal an ASCIDIA.

SHELL oblong, open at both ends.

Hinge furnished with a reflex fubulated tooth, often double, not inserted into any groove in the opposite valve.

I.
SILIGUA.

- Solen Siligua. *Lin. Syst.* p. 1114.—*Gmel. Syst.* p. 3223. 2.
Br. Zool. t. 45. f. 20.
Da. Coſta. p. 235. t. 17. f. 5.
Pult. Cat. Dorſet. p. 28.
Liſter. Conch. t. 409. f. 255.
Id. Angl. t. 5. f. 37.
Chem. Conch. vi. t. 4. f. 29.
Gualt. teſt. t. 95. C.
Don. Br. Shells. ii. t. 46.
Turt. Lin. iv. p. 180.

S. with a ſtrait ſub-cylindric ſhell, truncated at one end, a little rounded at the other; colour olivaceous-brown

brown; striated transversely, each stria turning longitudinally across the shell; towards the back a diagonal line from the hinge to the opposite end, that marks the turn of the longitudinal striæ; beneath the epidermis the shell is cinereous and white, with streaks of a purplish hue: hinge situate at one end: teeth in one valve single, with a remote lateral lamina; in the other valve two, with a lateral inclined tooth, corresponding with the opposite lamina. Length from hinge to margin an inch; breadth eight inches.

This shell is common on most of our sandy shores, found buried to the depth of a foot or more near low water-mark; it frequently elevates one end a little above the surface, and protrudes its body in search of food; upon being disturbed it suddenly recedes. This place is known by a small depression on the surface. In many places it is sought after for food, by the common people.



S. with a stria sub-cylindric shell, in every respect like *NOVACULA*. the *Siliqua* except in the hinge, in which it is essentially different, being furnished with one strong blunt curved tooth in each valve at one end, destitute of lateral lamina: these teeth turn contrary ways, and when closed clasp or hook into each other. This species may possibly have been confounded with the foregoing from its external similitude, for we do not find it noticed by any conchologist.

chologist. It is found on the sandy shores of *Caermarthenshire*, near *Laugharne*, together with the *Siliqua* of a large size. We have taken it full an inch long, and eight inches broad, but is extremely rare.

3.

ENSIS.

- Solen Ensis. *Lin. Syst.* p. 1114.—*Gmel. Syst.* p. 3224. 3.
Br. Zool. t. 45. f. 22.
Pult. Cat. Dorset. p. 28.
Da. Costa. p. 237.
Chem. Conch. vi. t. 4. f. 30.
Favm. t. 55. A. 3.
Lister Conch. t. 411. f. 257.
Don. Br. Shells. ii. t. 50.—*Turt. Lin.* iv. p. 180.

S. with a sub-cylindric arcuated shell, striated and coloured like the *Siliqua*: hinge at one end; a single tooth and a lateral lamina in one valve; which lock into two teeth and double laminae in the opposite valve.

This species is not uncommon upon many of our shores; is readily distinguished from the *Siliqua* which is invariably strait; whereas this is always more or less arcuated, but most so in younger shells. It rarely exceeds three-quarters of an inch in length, and five inches in breadth.

4.

VAGINA.

- Solen Vagina. *Gmel. Syst.* p. 3223. 1.
Br. Zool. t. 46. f. 21.
Chem. Conch. vi. t. 4. f. 26. to 28.
Favan. t. 55. B. 1.
Turt. Lin. iv. p. 180.
 Solen marginatus. *Pult. Cat. Dorset.* p. 28.

S. with

S. with a straight cylindric shell, rather truncated at both ends; that end next the hinge a little reflected; striated transversely, each stria turning longitudinally across the shell, but not marked with a diagonal line: hinge close to one end, furnished with a single small compressed tooth in each valve, which lie by the side of each other when closed: no lateral laminae: colour orange-yellow. Length about three-quarters of an inch, and rarely more than four inches broad.

This seems to be rather a scarce species; at least we have never met with it but on the sandy shores of *Caermarthenshire* near *Laugharne*. Mr. PENNANT says it inhabits *Red Wharf, Anglesea*. Doctor PULTENEY mentions it being dredged up at *Weymouth*, but rare.



Solen pellucidus. *Br. Zool.* t. 46. f. 23.
Turt. Lin. iv. p. 181.

S.
PELLUCIDUS.

S. with an oblong sub-arcuated, pellucid, fragile shell; compressed, and rounded at each end, covered with a greenish epidermis: hinge near to one end, furnished with a single small tooth in one valve, locking into two in the opposite, with a lateral process in each. Length a quarter of an inch: breadth little more than an inch.

This shell which was first noticed by Mr. PENNANT, was totally neglected by DA COSTA, who might perhaps

H

never

never have seen it, and considered it as a variety of the *Ensis* in a young state. The *pellucidus* is not much more than one third as broad as that shell in proportion to its length; it also differs in the hinge. We have found it in *Cornwall*, and have received it from *Sandwich*. Mr. PENNANT found it to inhabit *Red Wharf, Anglesea*. It is however a rare species.



6.

LEGUMEN.

- Solen Legumen. *Lin. Syst.* p. 1114.—*Gmel. Syst.* p. 3224. 4.
Br. Zool. t. 46. f. 24.
Lister Conch. t. 420. f. 264.
Chem. Conch. vi. t. 5. f. 32. to 34.
Don. Br. Shells. ii. t. 53.—*Da Costa.* p. 238.
Gault. t. 91. f. A.—*Turt. Lin.* iv. p. 181.

S. with a straight, oblong, sub-oval shell, thin and subpellucid; colour white, but mostly covered with a yellowish epidermis, and wrought with fine concentric striæ: hinge near the middle, furnished with two small teeth in one valve, receiving a single one from the opposite; with a hook-like process in each valve, pointing towards the cartilage. This species is mentioned as rare, or at least very local by several authors, and not to exceed two inches and a half in breadth. We have found it on the coast of *Caermarthenshire*, nearly an inch long, and four inches broad; and very little inferior in size in *Biddeford bay*, on the coast of north *Devon*, where it is in great abundance, and by far the most common species.

Mr. PEN-

Mr. PENNANT mentions it from *Red Wharf, Anglesea*.
 DA COSTA from the shore near *Christchurch, Hampshire*.

Solen fragilis. *Pult. Cat. Dorset*. p. 28.

FRAGILE

S. with a very thin, pellucid, fragile, glossy, white shell, somewhat depressed in the middle from the hinge to the opposite margin; oblong, rounded at both ends; hinge near the middle, furnished with a small subulate tooth in one valve; in the other two, one of which is subulate, the other broad, both recurved.

This is a very rare species; we received it from the Rev. Mr. RACKETT, and believe it was found on the *Dorset* coast. This specimen is nearly an inch and a half broad, and half an inch long.

DOCTOR PULTENEY speaks of it as belonging to the *Portland* cabinet, named by DOCTOR SOLANDER. We confess this shell has hitherto escaped our notice on the various parts of the coast we have examined, but can have no doubt of its being *English*, as the Doctor found it himself on *Studland* beach. This author mentions that it is marked with one or two reddish stripes, in an oblique direction from the hinge towards the margin; our specimen has no such markings.

ANTIQUATUS.

Solen antiquatus. *Pult. Cat. Dorset.* p. 23.

Solen Cultellus. *Br. Zool.* t. 46. f. 25.

Chama Solen. *Da Costa.* p. 238.

Lijter Conch. t. 421. f. 265.

S. with a thin, sub-pellucid, white shell, moderately glossy, wrought with fine concentric striæ; recent shells are covered with a yellowish-brown epidermis: the ends are rounded and gaping: hinge placed near the centre: teeth, a single one in one valve, locking in between two in the opposite; these are erect, and project beyond the *commiffure* or margin, and stand rather oblique. Inside smooth glossy white. Length near an inch, breadth two inches:

Mr. PENNANT, who first gave this species as a *British* shell, has erred with respect to the number of teeth, giving only a single tooth in each valve. DA COSTA, and Doctor PULTENEY have fallen into the same error. It should seem from this circumstance, that the teeth are easily destroyed, and indeed we have found it to be the case, but by the assistance of a glass readily discover the fractured part. We have received it perfect from *Looe* in *Cornwall*; but more frequently with the loss of one or two teeth. Mr. PENNANT speaks of its being found at *Weymouth*. DA COSTA received it from *Dorsetshire* and *Hampshire*. It may however be ranked among our scarcer shells.

As this species is certainly not the *Cultellus* of LINNÆUS, we have followed Doctor PULTENEY in the name here

here prefixed, and by which it was called by Doctor SOLANDER in the *Portland* cabinet.



Solen minutus *Lin. Syst.* p. 1115. 42.
Gmcl. Syst. p. 3226. 11.
Chem. Conch. vi. t. 6. f. 51. 52.
Lister Conch. t. 426. f. 267?
Turt. Lin. iv. p. 182.

9.
 MINUTUS.
 TAB. 1. f. 4.

S. with an opaque whitish shell, rugose or wrinkled transversely; sub-oval, truncated at one end close to the hinge: valves generally dissimilar, each furnished with two rows of concave spines running from the *umbo*; one along the upper or hinge side; the other in a diagonal direction the whole length of the shell. The under valve projects a little over the other, except at the truncated end close to the hinge. Length a quarter of an inch; breadth half-an inch.

This very rare species, never before noticed as *British*, we found burrowed in hard lime-stone at *Plymouth*, and can therefore with certainty add it to the list of *English* shells. It is a northern species, has been found to inhabit *Coral* rocks in *Norway* and *Greenland*.

LINNÆUS makes it to be the fizé of a cucumber feed; some we found were not so large, but one in particular far exceeded that size, the figure of which is given.

Solen

- Solen vespertinus*. *Gmel. Syst.* p. 3228. 20.
Chem. Conch. vi. t. 7. f. 59. 60.
- Tellina depressa*. *Br. Zool.* t. 47. f. 27.—*Turt. Lin.* iv. p. 186.
- Tellina variabilis*. *Pult. Cat. Dorset.* p. 29.
Don. Br. Shells. ii. t. 41. f. 2.
Turt. Lin. iv. p. 188.—*Favan.* t. 49. D. 1. 2.

S. with an ovate-oblong, depressed shell, moderately thick; white, or flesh-colour, marked with concentric striæ, and radiated with carnation from the *umbo* in all directions to the margin; beak nearly central, small; teeth erect, two in one valve, one in the other; with a strong projecting lamina in each, to which the connecting cartilage is fixed. Inside smooth, glossy; margin plain. In young shells the colours are much stronger: some are quite purple, others pale pink or orange, more or less rayed, frequently with one or two stronger rays at the *umbo*; and sometimes the interior margin is prettily streaked. Full grown shells are an inch and a quarter long; and near two inches and a half wide.

DOCTOR PULTENEY mentions this species to be found on the *Dorset* coast at *Poole* and *Weymouth*. It seems to have been named *Tellina variabilis* in the *Portland Cabinet* by DOCTOR SOLANDER; and the above author states he has some reason to believe, that DOCTOR SOLANDER intended to remove it from the *Tellens*.

We have found this shell at *Falmouth* in *Cornwall*; and not uncommon of a small size at *Kingsbridge* in *Devonshire*, and other parts of that coast: but live specimens are only taken by dredging.

GEN.

GEN. VII.

TELLINA.

Animal a TETHYS.

SHELL, generally flogging, or somewhat curved on one side.

Hinge most commonly with three teeth: the lateral teeth in one valve flat or nearly obsolete.

- Tellina fervensis. *Gmel. Syst.* p. 3235. 31.
Turt. Lin. iv. p. 191.
 Tellina ferroensis. *Chem. Conch.* vi. t. 10. f. 91.
Pult. Cat. Dorset. p. 29.
 Tellina incarnata. *Br. Zool.* t. 47. f. 31.
 Tellina radiata. *Da. Costa.* p. 209. t. 14. f. 1.
Lister. Conch. t. 394 f. 241.
Petiv. Gaz. t. 94. t. 9.
 Tellina trifasciata. *Don. Br. Shells.* ii. t. 60.

1.
 FERVENSI.

T. with a flat, oblong-ovate shell, three-quarters of an inch long, and an inch and a half broad, finely striated trans-

transversely; and elegantly radiated with red and white: *umbo* very small, placed nearly central: teeth two in each valve, no lateral ones: from the *umbo* an oblique elevated ridge runs to one end, where it forms an angle, and renders all the striæ at that part angulated and more rugose. Recent shells are frequently covered with a thin yellowish epidermis. Inside white, or more frequently of a rosy hue, smooth and glossy: margin plain. This does not appear to be a plentiful species. It is sparingly found at *Poole* and *Weymouth* in *Dorsetshire*: DA COSTA says at *Scarborough* in *Yorkshire*. We have found it in *Cornwall*, particularly at *Falmouth* dredged from the harbour; and on several parts of the coast of *South Devon*.

Certainly not the *trifasciata* of GMELIN.



2.

SQUALIDA.

Tellina squalida, *Pult. Cat. Dorset.* p. 29.

Telina depressa, *Gmel. Syst.* p. 3233. 55?

Gault. 88. L. M.

T. with a thin, flat, sub-oval shell, faintly striated concentrically; the cartilage end running into a beak: *umbo* small, central; teeth two in one valve, in the other three, one of which is a little remote, laminated at the base, sharp at the point: the small end of one valve reflects a little outwards and forms a depression on the surface; the other turns inwards to correspond: colour pale orange-yellow, sometimes almost white. Recent shells are frequently covered with a thin brown epidermis; beneath

neath which it is glossy. Inside sometimes yellow, in others white; margin remarkably sharp. Length an inch; breadth an inch and three-quarters. Dr. PULTENEY says it is found on the north shore at *Poole*, and at *Weymouth* sparingly.

We have found it in *Cornwall* and on several parts of the south coast of *Devon*,



Tellina læta. *Pult. Cat. Dorset.* p. 29.

3.
LÆTA.

Tellina punicea. *Gmel. Syst.* p. 3239.—*Turt. Lin.* iv. p. 194.

Born. Mus. t. 2. f. 8.

Chém. Conch. x. t. 170. f. 1654. 55.

T. with an ovate-oblong, flat, and moderately strong shell, marked with strong, regular, concentric striæ: equivalve, and nearly equilateral: *umbo* small, pointed; hinge furnished with three teeth; the outer one on the anterior side bifid, the other exterior one broad, more distant, standing obliquely transverse, and is a sort of medium between a primary and a lateral tooth; in each valve one lateral laminated tooth very remote: margin sharp.

English specimens are usually of a plain yellowish-white, without any of the coloured markings observed in exotics, which are rose or carnation, and frequently with lighter and darker shades in concentric bands. In size

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also

also ours are inferior to foreign ones, rarely exceeding three quarters of an inch in length, and an inch and three-eighths in breadth.

This species bears some resemblance to the *T. squalida*, but is not so pointed at the smaller end; it differs also in the teeth, and strong defined striæ.

We were first indebted to our late worthy friend Doctor PULTENEY for a knowledge of this species as an *English* shell, who informed us it was found on the sandy beaches in various parts of the *Dorsetshire* coast; and we have since been favoured with a specimen from Mr. BRYER, who assures us he has more than once picked it up on the sands between *Weymouth* and *Portland*.



4.

DONACINA.

- Tellina Donacina. *Lin. Syst.* p. 1118.—*Gmel. Syst.* p. 3234. 26.
Pult. Cat. Dorset. p. 29.—*Turt. Lin.* iv.
 p. 190.
Gualt. t. 88. N?
Chem. Conch. vi. t. 12. f. 119?
 Tellina trifasciata. *Br. Zool.* No. 33?

T. with a thin, sub-oval, compressed, semi-pellucid shell, faintly marked with concentric striæ, of a yellowish colour, prettily radiated with red: these rays in some are broken, and make the shell appear spotted, or zoned in belts parallel to the margin: *umbo* small, placed nearest

to

to one end; the cartilage end is short and much sloped from the hinge, so as to have a sub-truncated appearance, like the genus *Donax*: the hinge is furnished with two teeth in one valve; that behind the beak extends into a lateral lamina; a single tooth in the other valve. Inside smooth, glossy, yellow, rayed like the external part but more faint. Some specimens are almost white, but rarely without a red mark at the *umbo*, at which part, and on the margin of the umbonal regions, the colour is strongest in all. Length rarely more than half an inch, breadth three-quarters of an inch.

We have found this elegant species in *Falmouth* harbour; and in *Salcomb* bay, in *Devonshire*: have also received it from our worthy friend and able conchologist Mr. BOYS of *Sandwich*, on the shores of which place it is not uncommon. DOCTOR PULTENEY speaks of its being found at *Weymouth* sparingly. Mr. PENNANT, who probably intended this for his *trifasciata*, has been mistaken in quoting that shell of LINNÆUS: we believe that species has never been found in *England*.



Tellina tenuis. *Da Costa*. p. 210.

Don. Br. Shells. i. t. 19. 3 lower figures.

Tellina planata. *Br. Zool*. t. 48. f. 29.—*Turt. Lin*. iv. p. 188.

Tellina polita. *Pult. Cat. Dorset*. p. 29.

Lister Conch. t. 405. f. 250. 251.

Chem. Conch. vi. t. 11. f. 101;

Gault. 77. M.

5.

TENUIS

T. with a thin, brittle, flat, sub-pellucid, sub-oval, glossy shell, with a few fine concentric striæ; *umbo* small, placed nearly central; the cartilage end somewhat pointed: colour various; white, yellow, carnation, of all shades, more or less zoned with a lighter colour. Length half an inch, breadth three-quarters.

This species is plentiful on most of our sandy shores. It has been considered by DOCTOR PULTENEY, as well as DOCTOR SOLANDER to be distinct from the *planata* of LINNÆUS, and which accords with our opinion. DA COSTA had followed Mr. PENNANT in quoting that shell.

The synonyms of GMELIN'S *planata*, certainly do not accord with our shell; and yet it appears somewhat extraordinary that so common a species as this on our shores, should not have been known to those great naturalists.



6.
STRIATA.

Tellina striata. *Gmel. Syst.* p. 3238.—*Turt. Lin.* iv. p. 194.
Chem. Conch. vi. t. 12. f. 117.
Gualt. test. t. 89. C.

T. with a sub-oval, flat, thin, sub-pellucid shell, of a rosy-white colour, darkest towards the beak; somewhat glossy, but marked with very fine concentric striæ: when examined with a lens some minutely fine markings appear, as if it was longitudinally striated; but these are chiefly veins in the body of the shell: *umbo* very small, pointed, not quite central; cartilage-slope indented.

Inside

Inside rosy, white round the margin: teeth two, with strong laminated ones in each valve placed remote, one on each side. Length one inch, breadth five-eighths of an inch.

The shell above described, which appears to be the *T. striata* in a depauperated state, we were favoured with by Mr. BRYER, who found it on the beach between *Weymouth* and *Portland*,

CHEMNITZ has given a good figure of nearly the size of ours, and has with doubt called it the *Tellina balauftina* of LINNÆUS, but it is certainly not that shell.

We believe this species has never before been noticed as *British*; but possibly from similitude to the *T. tenuis* it may have been confounded; it is however at once discriminated by the fine regular transverse striæ, and strong lateral teeth on each side. Whereas the *tenuis* has no lateral tooth in one valve, and only one in the other, and that not very remote.



Tellina Fabula, *Gmel. Syst.* p. 3239. 61.

Turt. Lin. iv. p. 194.

Don. Br. Shells. iii. t. 97.

Tellina discors. *Pult. Cat. Dorset.* p. 54.

FABULA.

T. with a thin, pellucid, compressed, oval, white shell, with usually a tinge of blush, or yellow at the *umbo*; and sometimes the whole shell is of a dull yellow, or yellowish-white,

white, glossed with a pearly hue, as viewed in some particular lights; *umbo* placed nearly central, very small, pointed, and turned a little to one side: the anterior side slopes very considerably to an obtuse point; the opposite end is much larger and perfectly rounded. Inside smooth, glossy-white, with usually more or less tinge of yellow towards the beak: hinge furnished with three teeth in one valve, one of which is lateral, not very remote: in the other valve only two small central teeth.

The remarkable character of this shell is, that the valve possessed of three teeth, or (as Doctor PULTENEY expresses it) the left valve, is finely, regularly, and elegantly striated in a diagonal direction; but not very conspicuous without the assistance of a lens: the other valve is quite plain, except the usual concentric wrinkles, which are faint; this valve turns a little inwards, at the point of the produced end, to correspond with the other which reflects at that part. It is subject to some variety, with respect to the diagonal striæ peculiar to the sinistral valve; in some these run all over, except down the cartilage slope; in others only half way from the smaller end, the larger end being only marked with concentric wrinkles.

This species might readily be confounded with the *T. tenuis*, but is broader in proportion to its length, and more produced and pointed at the smaller end: it is indeed more like the *T. læta* in shape, but greatly inferior in size.

We have received it from our worthy friend Mr. BOYS of *Sandwich*, where it is not uncommon, of a much superior size to those found on other parts of our coasts; measuring five-eighths in length, and one inch in breadth: whereas those on the *Dorsetshire* coast are still smaller by DOCTOR PULTENEY'S account, who says they have been found on the beach at *Studland*.

It is also found on the south coast of *Wales*, particularly near *Tenby*; but we have never met with it more plentiful than in the sand heaps about *Kingsbridge* in *Devonshire*, which is brought from *Salcomb bay*, for the purpose of manure.

It seems this shell was known to DOCTOR SOLANDER, by whom it was named *femistriata*.

GMELIN says, it inhabits the *Norwegian*, *Mediterranean*, and *American* seas.



- Tellina incarnata. *Lin. Syst.* p. 1118. 58?
Gmel. Syst. p. 3234. 25?
Chem. Conch. vi. t. 12. f. 110.
Lister Conch. t. 405. f. 250. 251.
Id. Angl. t. 4. f. 25.
Turt. Lin. iv. p. 190.
- Tellina carnaria. *Br. Zool.* t. 49. f. 32.
 Tellina rubra. *Da. Costa.* p. 211. t. 12. f. 4.
 Tellina solidula. *Pult. Cat. Dorset.* p. 29.

S.
 SOLIDULA.

T. with

T. with a strong, convex shell, of a sub-orbicular shape; the posterior end in some projecting into a short beak somewhat compressed: colour various; white, yellow, red, with intermediate shades; some are plain, others are banded or zoned: *umbo* placed near the middle; hinge furnished with two small teeth in each valve. Length three-quarters of an inch: breadth rather more. The inside of this shell is generally of a stronger and much finer colour than the outside: in some it is of a deep red.

This species is found common on most of the *British* coasts, particularly the sandy bays and inlets, buried four or five inches beneath the surface.

This is certainly not the *carnaria* of LINNÆUS, as was supposed by Mr. PENNANT; but there seems little doubt that it is the *incarnata* of that author; and what rather confirms us in this opinion is, that the synonyms of GMELIN in most instances corresponds with ours.



9.

FAUSTA.

Tellina Remies. *Lin. Syst.* p. 1119. 62?

Gmel. Syst. p. 3239. 66.

Turt. Lin. iv. p. 195.

Chem. Conch. vi. t. 12. f. 112. 113.

Lister. Conch. t. 266. f. 102.

Tellina fausta. *Pult. Cat. Dorset.* p. 29.

T. with a sub-orbicular, somewhat compressed, sub-pellucid, white shell, with numerous fine concentric striæ:

striæ: at the posterior end a flexure from the *umbo* to the margin: *umbo* small, nearly central, and not turning to either side: hinge furnished with strong lateral teeth, that on the cartilage side very remote: one of the primary teeth in each valve bifid. Inside smooth, white; margin plain. This shell is nearly as long as it is broad; the sides slope considerably, and occasion the *umbo* to be much produced. In some points of view many fine opaque radii are observed, as it were within the body of the shell.

DOCTOR PULTENEY, who first gave this species as *British*, states it to have been found one inch and three-quarters wide, dredged up at *Weymouth*; and adds that small ones are found on the shore.



Venus crassa.	Gmel. Syst. p. 3288. 90.	10.
Tellina crassa.	Br. Zool. t. 48. f. 28.	CRASSA.
	Turt. Lin. iv. p. 186.	
Pectunculus depressior.	Da. Costa. p. 194. t. 13. f. 4. right hand.	
Tellina rigida	Pult. Cat. Dorset. p. 30.	
	Lister Conch. t. 299. f. 136.	
	Favan. t. 48. O.	

T. with a strong, thick, sub-orbicular shell, with fine close-set, concentric striæ, interrupted by a few coarser ridges: colour white, with broad and narrow rays of pink, most conspicuous towards the margin: some are plain white, others of a yellowish cast: the valves unequal; the left or lower valve is considerably convex, the

K

other

other much more compressed : *umbo* placed a little to one side, point small, turning forwards : hinge furnished with two teeth in each valve, one of which is bifid : in the deep valve two lateral teeth, one more remote than the other. Inside white, with a tinge of bluish colour. Length an inch and a half, breadth two inches ; sometimes larger.

DA COSTA, who gives this shell by the title of *Pedunculus depressior*, says he received it from *Cornwall*. He does not choose to give Mr. PENNANT credit for his *Tellina crassa*, but makes that shell his *Trigonella plana*.

There is no doubt however that PENNANT knew this shell by his description, and speaks of it as distinct from his *Venus borealis*, the *Trigonella plana* of DA COSTA.

DOCTOR PULTENEY notes it as rare at *Weymouth*, and on the north shore at *Poole*.

We have found it plentiful at *Falmouth* and at *Helford* in *Cornwall*, dredged up with the sand from those harbours, but rarely double or live shells.

Also on some parts of the south coast of *Devon*, particularly *Salcomb bay* ; and on the coast of *Caermarthen-shire* in *Wales*.



11.
PROFICUA.

Tellina proficua. *Pult. Cat. Dorset.* p. 29.
Petiv. Gaz. t. 93. f. 18.
Chem. Conch. vi. t. 12. f. 118.

Tellina

Tellina reticulata. *Lin. Syst.* p. 1119. 63.

Gmel. Syst. p. 3240. 67?

Turt. Lin. iv. p. 195.

T. with a sub-orbicular, sub-diaphanous shell, beset with numerous fine, regular, elevated, concentric ridges; the interstices or furrows crossed with minute striæ, scarce discernable but by the help of a glass: *umbo* small, prominent, placed nearly central, and turns a little to one side: hinge with two small central teeth, and broad laminated lateral ones, projecting above the margin; from the apex a furrow runs on the inner side of the posterior lateral tooth, in which the connecting cartilage is fixed; colour yellowish-white. Inside smooth, glossy yellow: the tongue or *cicatrix* to which the animal is affixed, is broad, and runs into the middle of the shell; margin plain, beneath which is a depressed punctured line, parallel with the outer edge, not very conspicuous in younger shells. Length an inch and a quarter, breadth somewhat more.

We were favoured with this species by the Rev. Mr. RACKETT, who said it was found rarely in *Dorsetshire*. DOCTOR PULTENEY says on the north shore at *Poole*, and at *Weymouth*.

CHEMNITZ has given a very good figure of this shell, and quoted the *Tellina reticulata* of LINNÆUS. GMELIN has not quoted CHEMNITZ's figure, nor has he given any synonyms.

T. with a convex, sub-orbicular, white shell; beset with numerous fine sharp-edged striæ concentrically: extremely rough to the touch like a rasp: *umbo* central, small; apex turned to one side, very little projected; umbonal region much depressed, and marked with an oblong cordiform cavity; a flexure, at the posterior end, running from behind the *umbo* to the front angle, not quite parallel with the cartilage slope: hinge with two small teeth in each valve standing a little oblique, no lateral ones. Inside white, not glossy; a border round the margin more perfectly white than the rest: *cicatrix* narrow, running downward, nearly parallel with the margin.

This species has much the habit of the *proficua*, but is easily distinguished from it externally by the beak being less produced, by the cordiform depression; by the flexure at the posterior end, and by the superior convexity and want of the longitudinal striæ. Internally by not having any lateral teeth or groove; in the shape and situation of the tongue or *cicatrix*; and in being invariably white.

With these strong and essential characteristic distinctions, it is hardly possible to conceive these two shells can have been confounded, and yet it is somewhat extraordinary, that a shell so abundant as this is on some of our coasts, should have remained so long unnoticed by those who have written professedly on the subject; for we cannot
affix

affix any synonyms to it. The usual size is about an inch and a half broad, and scarcely the eighth of an inch less in length. We have found it not uncommon on some parts of the coast of *South Devon*; less frequent on the *Caermarthenshire* coast about *Laugharne*, and in great abundance in *Cornwall*, particularly at *Falmouth*, amongst the sand dredged from the harbour for the purpose of manure; by which means it is common in the arable fields about that place.



- Tellina bimaculata. *Lin. Syst.* p. 1120. 67.
Gmel. Syst. p. 3240. 71.
Chem Conch. vi. t. 13. f. 127. var. 132. a. b.
Pult. Cat. Dorset. p. 30.
Don. Br. Shells. i. t. 19. f. 1. & two purple figures.
Lister Conch. t. 385. f. 232.—t. 389. f. 228?
Da Costa. p. 213.
Turt. Lin. iv. p. 196.
- Tellina variegata. *Gmel. Syst.* p. 3237. 43?
Turt. Lin. iv. p. 192.

13.

BIMACULATA.

T. with a roundish, sub-triangular shell, faintly striated transversely; whitish, with two deep-red or purple spots or streaks at the beak; in some specimens this mark runs more than half way across the shell, but never quite; is much stronger marked within than on the outside: *umbo* nearly central; apex turned a little to one side; primary teeth large; lateral ones strong, remote. Length half an inch; breadth five-eighths. It is sometimes found quite plain,

plain, others are marked with a few interrupted rays of pale purple, which appear like spots in the shape of arrow-heads, besides the broad purple or red streaks; but in some the broad marks are entirely wanting, and the pale-purple spots or rays only visible, which variety is probably the *Tellina variegata* of GMELIN. DA COSTA says he received this species from the shores of *Lancashire* and *Hampshire*. DOCTOR PULTENEY says sparingly on the coast at *Poole* and at *Weymouth*.

We believe it to be amongst the rare shells of *Great Britain*, though we are informed by Mr. BRYER that it is not uncommon on the shore between *Weymouth* and *Portland*; specimens of which he favoured us with, and amongst them a variety entirely white.



14.
LACTEA.
TAB. 2. f. 4.

Tellina lactea. *Lin. Syst.* p. 1119. 65.
Gmel. Syst. p. 3240. 69.
Pult. Cat. Dorset. p. 30.
Chem. Conch vi. t. 13. f. 125?
Petiv. Gaz. t. 93. 18.
Gualt. t. 71. D.
Turt. Lin. iv. p. 195.

T. with a thin, orbicular, convex, white shell, with fine concentric irregular wrinkles: *umbo* small, turning to one side, central; hinge furnished with two teeth in one valve, one in the other; these are very small, but what at once distinguishes this shell is a deep sulcus or groove
by

by the side of the teeth in each valve, running from the *umbo*, into which the connecting cartilage is fixed.

This species is not in general glossy in a recent state, and most commonly has the striæ interspersed with a few antiquated ridges. Diameter three quarters of an inch. It is found on many parts of the coast, chiefly in bays and inlets. We have met with it sparingly at *Falmouth*, about *Kingsbridge* in *Devonshire*, at *Poole* in *Dorsetshire*, and have received it from *Kent*: but it does not appear to be common any where, and live shells are very rare.



Tellina undata. *Pult. Cat. Dorset*. p. 30?

15.

ROTUNDATA.

TAB. 2. f. 3.

T. with a thin, sub-pellucid, orbicular, white shell, rather convex, wrought with fine (almost obsolete) striæ concentrically; moderately glossy: *umbo* small, rather prominent, and turned to one side, placed near the middle: teeth two in each valve, one of which is bifid, the other a little diverging. Inside smooth, glossy white. This species varies a little in shape, in some the front margin is a little straitened, and makes one end rather smaller than the other, in which case the breadth rather exceeds the length. Its largest diameter is seldom more than an inch, and few equal that size.

This shell has much the habit of the *Venus undata*, and may readily be confounded with it; the material distinction

on

on is, that it is not so much produced at the *umbo*, the hinge not so strong, and in not having three teeth in either valve, the essential character of that shell: nor has it any *cicatrix* within.

We believe Doctor PULTENEY has given this for the *Venus undata* of PENNANT under the title of *Tellina undata*; for we have no doubt if the Doctor had been fortunate enough to have found the *Venus undata*, he would not have placed it in the *Tellen* genus. This last author mentions having found it at *Poole* not uncommon. We have picked it up on the shores of that harbour; also on the coast of *Devonshire*, and at *Falmouth* in *Cornwall*, but rarely live or double valves.



16.

FLEXUOSA.

Venus sinuosa. Don. Br. Shells. t. 42. f. 2.

T. with a thin, pellucid, fragile, convex, sub-orbicular, white shell: from behind the *umbo* to the lower angle of the margin, a fulcus runs parallel with the cartilage slope, and forms a sinus or flexure at the edge. It is finely, but irregularly striated concentrically, and is not very glossy: *umbo* placed central, much produced, and turns to one side at the apex: hinge with an obsolete tooth; along the margin, from behind the *umbo*, a groove in which is fixed the connecting cartilage: Inside smooth, glossy white. Mr. DONOVAN has given a figure of a variety of this shell, as the *Venus sinuosa* of PENNANT, in
which

which we conceive he has erred. We believe this singular species was first noticed by us in *Cornwall*, from which place we sent several specimens to Mr. RACKETT, from whose collection DONOVAN states to have taken his figure.

Mr. PENNANT's shell is certainly in obscurity, but it is impossible he could have intended this for it, for independent of the figure given in the *Br. Zoology*, which is not in the least like this shell in size or shape, the placing it as a *Venus* precludes the possibility of their being the same. The *Tellina flexuosa* is indeed sometimes a little indented on the front margin; but this must be considered as an accidental distortion; and in no case is it found without the fulcus and sinus at the posterior end, the strong specific character.

This shell seldom exceeds three-eighths of an inch in diameter, and never arrives at half an inch; and in length is rather more than in breadth.

It is plentiful in the sand of *Falmouth* harbour, and not uncommon on the south coast of *Devonshire*.



Tellina carnaria. *Lin. Syst.* p. 1119.
Gmel. Syst. p. 3240. 70.
Chem. Conch. vi. t. 13. f. 126.
Pult. Cat. Dorset. p. 30.
Lister Conch. t. 339. f. 176.

17.

CARNARIA.

L

Tellina

Tellina carnaria. *Don. Br. Shells.* ii. t. 47.

Turt. Lin. iv. p. 195.

Cardium carneofum. *Da Costa.* p. 181.

T. with a sub-orbicular, sub-pellucid, flattish shell, with one side rather longer than the other, striated in three directions; the middle area is rather oblique from the *umbo* to the margin; the posterior end in an oblique direction the contrary way; those on the anterior margin transverse and undulated; these striæ are extremely fine as if cut with an engraving tool: colour most commonly white, with a rosy hue; others are pink or carnation, and sometimes banded with paler and darker shades: *umbo* nearly central, small, and turns a little to one side: hinge furnished in one valve with two small teeth, one of which is bifid, in the other one tooth: lateral laminated teeth remote. Inside smooth, glossy, most commonly of a fine rose colour. Length rarely more than three-quarters of an inch; breadth about an eighth of an inch more.

DoCTOR PULTENEY says, this elegant species is found sparingly at *Poole* and at *Weymouth*. DA COSTA mentions having received it from *Scarborough* and other places in that county, and likewise in plenty from *Devonshire* and *Cornwall*. We must however remark a suspicion that DA COSTA was misled with respect to this shell being plentiful in the last mentioned counties, as we have examined those coasts frequently, without ever finding even a single valve.

Tellina

Tellina inæqualvis. *Lin. Syst.* p. 1118.

INEQUALVIS.

Gmel. Syst. p. 3233. 23.

Chem. Conch. vi. t. 11. f. 106. a. b. c. d.

Don. Br. Shells. ii. t. 41. f. 1.

Turt. Lin. iv. p. 189.

T. with an oblong, sub-oval, sub-pellucid, white shell; one valve is nearly flat, the other convex: arcuated along the cartilage slope, and extending into a considerable obtuse beak at that end; the other end rounded: teeth two; no lateral teeth. Length half an inch, breadth one inch.

This species, which is an inhabitant of the *Mediterranean* and *Norwegian* seas, has been given by Mr. DONOVAN as an *English* species; whether it is strictly so is at present to be doubted; though he assures us it is found on the coast of *Guernsey*.



T. testa subovata crassiuscula, decussatim striata, maculis irregularibus. *Adams Min. Shells. Lin. Trans.* iii. p. 252.

MACULATA.

This species, which appears not to have been described before, Mr. ADAMS adds the following observation upon.

It is remarkable in this species, that although the figure of the spots in different specimens is quite dissimilar, yet in both the upper and under shell they are perfectly similar.

Found at *Tenbigh*.

 GEN. VIII.

 CARDIUM.

Animal a TETHYS.

SHELL bivalve, equivalve, convex, for the most part longitudinally ribbed.

Hinge with two teeth near the beak, a larger placed remote on each side, locking into the opposite valve.

1.
EDULE.

-
- Cardium edule. *Lin. Syst.* p. 1124. 90.
Gmel. Syst. p. 3252. 20.
Chem. Conch. vi. t. 19. f. 194.
Lifter Conch. t. 334. f. 171.—*Id. Ang.* t. 5.
 f. 34.
Br. Zool. t. 50. f. 41.—*Turt. Lin.* iv. p. 205.
Pult. Cat. Dorset. p. 30.—*Gualt.* t. 71. F.
- Cardium vulgare. *Da Costa.* p. 180. t. 11. f. 1. 1.

C. with about twenty-six antiquated ribs, of a yellowish-white colour; the posterior end a little elongated, and generally of a darker colour. Greatest diameter rarely exceeds an inch and three-quarters.

This

This species is very common in most of our inlets and bays, near the mouths of rivers, where the shore is sandy, buried three or four inches under the surface; where it is taken for the table, and is vulgarly called *Cockle*.

A variety is frequently found quite equilateral, not so large, and perfectly white; such has been considered as a distinct species, but we believe without foundation.



2.

- Cardium aculeatum.* *Lin. Syst.* p. 1122. 78.
Gmel. Syst. p. 3247. 7.
Chem. Conch. vi. t. 15. f. 155. 157.
Gualt. t. 72. A.—*Br. Zool.* t. 50. f. 37.
Turt. Lin. iv. p. 201.—*Da Costa.* p. 175.
Don. Br. Shells. i. t. 6.—*Favan.* t. 52. A.
Lister Conch. t. 321. f. 153 ?

ACULEATUM.

Cardium tuberculatum. *Pult. Cat. Dorset.* p. 30 ?

C. with a very convex shell; the anterior side rounded, the other nearly straight, or as it were truncated, and more elongated at the front marginal angle; ribs about twenty one, with a depressed line down the middle; the round end beset with large compressed tubercles, the other part towards the margin with spines, which increase in length at the opposite side: colour yellowish brown, fasciated and blotched with rufous, and sometimes blackish. Inside glossy purplish, or flesh colour, with flat ribs, the furrows on the outside becoming raised within; interstices between the ribs white.

Mr. PEN-

Mr. PENNANT has given a very good figure of this shell, and says it is found off the *Hebrides* and *Orknies*.

We have found it on several parts of the coast of *South Devon*, particularly on *Dawlish Warren*, and at *Tor-cross*. Diameter from the beak to the projecting angle of the longest side four inches, circumference about eleven.

3.

ECHINATUM.

- ◆—
- Cardium echinatum.* *Lin. Syst.* p. 1122. 79.
Gmel. Syst. p. 3247. 8.
Br. Zool. No. 28.
Da Costa p. 176. t. 14. f. 2.
Pult. Cat. Dorset. p. 30.
Chem. Conch. vi. t. 15. f. 158.
Gualt. t. 72. B.—*Favan.* t. 52. C. 1, 2.
Lister Conch. t. 324. f. 161.
Id. Ang. t. 5. f. 33.—*Turt. Lin.* iv. p. 201.

C. with a very convex shell, having about eighteen ribs furnished with numerous, close-set, convex spines; colour rusty-orange yellow.

This species differs from the *aculeatum* in being more round, the ribs more raised, which with the furrows are more wrinkled; the spines are more numerous and contiguous, but not so long; the shell is stronger, the teeth larger; and in size rarely exceeds two inches and a half in diameter. Inside white, glossy; the ribs not so much raised at the upper part towards the beak. Mr. PENNANT says this shell has sixteen ribs: LINNÆUS gives it twenty;

twenty ; in this particular both may be right, for in some the side ribs are scarcely defined but by rudiments of the spines.

This is common on most of our shores, and very numerous in some places, mostly worn and bleached white : live shells are rarely obtained but by dredging : in this manner we have taken very fine specimens from *Salcomb bay*. At *Falmouth* in *Cornwall* a shell very similar to this in shape is common on the shore, and in the sand dredged from the harbour : these have neither spines nor tubercles, vastly stronger and thicker, the ribs more convex, on which sometimes are a few rudiments of tubercles ; colour dark rusty-brown : inside furrowed only about half an inch from the margin.

We dare not venture to give this as a distinct species, never having been able to procure it in a recent state, although we have picked up some hundreds ; and what is remarkable, none of the thinner shells are to be met with at that place. It is however sometimes found on some parts of the *Devonshire* coast with the other, and we have taken it on the coast of *Caermarthen*.

The young of the *echinatum* have the ridges, or ribs so much more angulated or sharp, as to have been confounded with the *ciliare*



4.

Cardium ciliare. *Lin. Syst.* p. 1122. 80.—*Gmel. Syst.* p. 3248. 9. CILIARE.
Br. Zool. t. 50. f. 39.

Cardium

Cardium ciliare. *Pult. Cat. Dorset.* p. 31.

Don. Br. Shells. i. t. 32. f. 2.

Chem. Conch. vi. t. 17. f. 171. 172.

Lister Conch. t. 325. f. 162.—*Gualt.* t. 72. C.

Turt. Lin. iv. p. 202.

Cardium parvum. *Da Costa.* p. 177.

C. with an orbicular, thin, delicate shell; with about eighteen sharp ribs, furnished with very compressed pointed spines; the grooves or furrows flat at the bottom, and somewhat glossy: colour generally white, but sometimes partly yellowish.

This elegant species is rather scarce in *England*, though it has been noticed on several of our shores. We have found it sparingly in *Cornwall* and *Devonshire*. Diameter rarely above three-quarters of an inch.

5.

LÆVIGATUM.

Cardium lævigatum. *Lin. Syst.* p. 1123. 88.

Gmel. Syst. p. 3251. 18.

Br. Zool. t. 51. f. 40.—*Petiv. Gaz.* t. 93. f. 12.

Da Costa. p. 178. t. 13. f. 6. 6.

Pult. Cat. Dorset. p. 31.—*Gualt.* t. 82. A.

Don. Br. Shells. ii. t. 54.

Chem. Conch. vi. t. 18. f. 85. 86.

Lister Conch. t. 332. f. 169.—*Id. Angl.* t. 5. f. 32.

Cardium oblongum. *Gmel. Syst.* p. 3254. 34?

crassum. *Id.* p. 3254. 35?

fluviatile. *Id.* p. 3255. 40.

C. with

C. with a sub-oval strong shell, striated longitudinally; covered by a glossy yellowish-brown *epidermis*, which renders the striæ nearly obsolete; a few irregular, concentric wrinkles are also observable: beneath the *epidermis* the shell is of a flesh colour. Inside smooth, glossy, white; margin denticulated. Length two inches and a half; breadth two inches. Young shells beautifully polished and mottled with reddish-brown, or pink; inside pink, except at the margin, where it is broken into spots in some, in others plain white.

This species is found on many parts of our coast, but is not commonly met with in a living or recent state.

We have frequently taken it by dredging in *Salcomb bay*.



C. with a flat, sub-orbicular shell; colour rufous-white, 6. *Nodosum*, with twenty four ribs covered with close-set, obtuse tubercles. Inside white, glossy; margin strongly denticulated.

We found this new species sparingly amongst sand from *Falmouth* harbour. Diameter three-quarters of an inch.

Although this shell bears some resemblance to the young *echinatum*, it must not be confounded; the young of that species is always more globose, or convex; the ribs are more sharp, and the tubercles more pointed and distant.

M

C. with

7.
ELONGATUM.

C. with a compressed, sub-oval, sub-angulated shell, of a yellowish-white or light rufous colour; with twenty one ribs, faintly wrinkled and rounded; *umbo* not central; posterior side somewhat elongated, and angulated. Diameter a quarter of an inch.

We found this new species by dredging in *Salcomb bay*, but sparingly.



8.
EXIGUUM.

Cardium exiguum. *Gmel. Syst.* p. 3255. 37.

Lister Conch. t. 317. f. 154.

Walk. Min. Shells. f. 83.

Cardium pygmæum. *Don. Br. Shells.* i. t. 32. f. 3.

Turt. Lin. iv. p. 207.

C. with a very convex, sub-triangular, sub-cordated, white shell, with about twenty tuberculated ribs, the interstices strongly striated transversely: anterior side much sloped, running into an angle nearly opposite the *umbo*. Old shells lose the tubercles and become wrinkled all over. Inside smooth, white, frequently rufous at the angulated side; margin denticulated. Length from the beak to the projecting angle of the front margin rather more than half an inch; breadth nearly the same.

We have found this species in great abundance at *Falmouth* in sand from the harbour; and not uncommon at *Salcomb*, in *Devonshire*. Have also received it from Mr. Boys, found on the coast of *Sandwich* sparingly.

Cardium

Cardium medium, *Lin. Syst.* p. 1122.—*Gmel. Syst.* p. 3246. MEDIUM.

Turt. Lin. iv. p. 200.

Chem. Conch. vi. t. 16. f. 162—164.

Lifter Conch. t. 316. f. 153.

Gualt. t. 83. f. B.

Don. Br. Shells. i. t. 32. f. 1.

C. with a sub-triangular, sub-cordated shell, with about thirty six smooth ribs, of a white colour, spotted and variegated with chestnut-brown: somewhat truncated on one side, and running into an angle at the front margin; the other side is shorter and rounded. Inside white, usually coloured with ferruginous or chestnut about the truncated side: primary teeth one in each valve, which with the lateral ones are strong and elevated: margin crenated.

On the authority of Mr. DONOVAN we have given this as a *British* shell, as he informs us it has been found near *Hartlepool*, on the coast of *Durham*. The figure given by that author is scarce an inch in length: foreign specimens are more than double that size.

Said to be found in the *Mediterranean* and *American* seas. It has much the shape of the *Cardium exiguum*.



Cardium læve apice minuto. *Walk. Min. Shells.* 86?

RUBRUM.

C. with a convex, smooth, glossy, pellucid, red shell: hinge not quite central; rather broader than it is long, rounded at both ends: *umbo* prominent; hinge with nearly

obsolete primary teeth; lateral ones very conspicuous. Inside glossy red; margin plain.

Not uncommon in sand from *Falmouth*, and some parts of the *Devonshire* coast, particularly about *Kingsbridge*. A minute species not exceeding the eighth of an inch in breadth.

From the description in WALKER'S Minute Shells, we have little doubt but this is the shell there described; and that either the size was forgot to be placed with the figure, or that it is found of a superior size on the coast of *Kent*.



11.
DISCORS.

Tellina piliformis. *Gmel. Syst.* p. 3241 ?
Turt. Lin. iv. p. 196 ?

C. with a very convex, sub-orbicular, glossy, white shell, finely striated in an oblique direction, curved at the anterior side, the posterior end in a contrary direction, forming an acute angle with the others; these are so fine as scarcely to be observed by the naked eye: *umbo* small, central, and turns a little to one side. Inside glossy white; margin plain; hinge furnished with one tooth: in the opposite valve two, one of which is very small, with remote lateral teeth-like laminae. Size of a small pea, or rather more than a quarter of an inch long, and not quite so broad.

We

We hesitate to determine this shell to be actually *English*, having only found one dead specimen in sand at *Falmouth*, taken from the harbour.



12.

Cardium subcordatum antice muricatum. *Walk. Min. Shells.* MURICATULUM.
f. 84.—*Adams. Microsc.* t. 14. f. 44.

C. with a heart-shaped, opaque, white shell, margin muricated.

A microscopic species, minutely small, found at *Sheppy* island, not uncommon.



13.

C. with a thin, fragile, semi-pellucid, orbicular, white shell, finely and regularly striated transversely in an arcuated manner, as if cut with an engraving tool, with a few irregular concentric furrows; not glossy: beak or *umbo* central, pointed at the apex, and turning to one side; hinge furnished with one primary tooth in each valve; laminated teeth remote: on the side of the middle tooth a fulcus or groove in which the connecting cartilage is fixed. Inside white, a little glossy, very concave; margin slightly crenated. Diameter not quite half an inch.

ARCUATUM.
TAB. 3. F. 2.

This shell has somewhat the habit of the *Tellina divaricata* of LINNÆUS.

We found this elegant species in *Falmouth* harbour, dredged up with sand for manure; but not common.

Tellina

14.

CORNEUM.

- Tellina cornea. *Lin. Syst.* p. 1120. 72.
Gmel. Syst. p. 3241. 76.
Chem. Conch. vi. t. 13. f. 133. a. b.
Turt. Lin. iv. p. 197.
Lister Conch. t. 159. f. 14.—*Id. Ang.* t. 2.
 f. 31.
Don. Br. Shells. iii. t. 96.
Br. Zool. t. 49. f. 36.
Lin. Trans. iii. t. 13. f. 39. 40.
- Tellina rivalis. *Muller verm.* 387—*Gualt.* t. 7. B. C.
 Cardium Nux. *Da Costa.* p. 173. t. 13. f. 2.
 Cardium corneum. *Pult. Cat. Dorset.* p. 31.
 Cardium amnicum. *Id.* p. 31?

C. with a thin, pellucid, sub-orbicular, convex shell, marked with fine concentric striæ; *umbo* central, obtuse, with the middle teeth very small, lateral laminated ones remote, prominent. Inside smooth, glossy bluish-white: size commonly about three-eighths of an inch in length, and somewhat broader.

In the river *Thames* it is found of extraordinary magnitude, frequently above half an inch long, and nearly three-quarters wide. Is in a recent state always covered with a thin glossy *epidermis* of a lighter or darker horn-colour.

Common in most slow rivers and stagnant pools.



15.

AMNICUM.

- Tellina amnica. *Gmel. Syst.* p. 3242.—*Turt. Lin.* iv. p. 197.
Muller. verm. p. 205. No. 359.

Tellina

- Tellina amnica.* *Chem. Conch.* vi. t. 13. f. 134.
Gualt. t. 7. CC.—*Shroet Flufskonch.* p. 193.
 No. 12.—p. 194. No. 17. 18. t. 4. f. 7. a. b.
- Tellina rivalis.* *Lin. Trans.* iii. p. 44. t. 13. f. 37. 33
Turt. Lin. iv. p. 187.
Don. Br. Shells. ii. t. 64. f. 2.

C. with a thin, sub-pellucid, sub-oval, convex shell, fulcated tranfverfely; *umbo* placed neareft to one fide; hinge furnifhed with one central tooth, and two lateral teeth on each fide in one valve, ftanding parallel one within the other, the outer of which is very fmall; in the other valve two primary teeth approximating, and ftanding oblique, with one lateral tooth on each fide: colour like the preceding fpecies; fize much inferior. Length rarely three-eighths of an inch, breadth half an inch.

This fhell had long been confounded in *England*, until Doct^r MATON defined the diftinction in the *Linnean Tranfactions*. The Doct^r remarks, that he generally found it on the chalky parts of the bed of the *Avon*, and in rivulets communicating with it near *Salifbury*.

We have found it not uncommon in the northern *Avon*, in *Wiltfhire*, a different river from that before mentioned, running through the north of that county, and difcharging itfelf into the *Bristol* channel; whereas the other flows through *Hampfhire*, and difembogues near *Chriftchurch*.

It

It has also occurred to us in other places, particularly in the water-courses in the meadows near *Wareham* in *Dorsetshire*; but by no means so plentiful as the *C. corneum*.

There can be no doubt but this is the *Tellina amnica* of MULLER, which he describes very well in the following words, *testa subcordiformis transversim sulcata, umbone obtuso*. It is rather unfortunate that the name of *Tellina rivalis* has of late been adopted for this shell, as it is likely again to produce confusion, MULLER having previously given that name to the *T. cornea* of LINNÆUS.

It is indeed at once distinguished from that shell by its more oval shape, strongly fulcated appearance, and by the *umbo* not being in the centre: the hinge is also much stronger, and the teeth though somewhat similar, are much larger and more conspicuous.

Our late worthy friend Doctor PULTENEY, does not seem to have sufficiently defined the distinction in his *Cardium amnicum*, to make us consider it other than a variety of the *C. corneum*.

A minute shell not above a line in length, similar to this in shape, but somewhat more cordiform, and tumid, and with teeth as strong in proportion, is very common in almost all the waters inhabited by either of the two preceding species; and frequently plentiful in the mud or sediment of rivulets, ponds, and even ditches where none of a superior size are found; but we cannot determine
whether

whether it is really distinct. It is however proper to remark, that the young of the *amicum* extracted from the parent shell, though not much inferior in size, are always more compressed.



16.

Tellina lacustris. *Gmel. Syst.* p. 3242.—*Turt. Lin.* iv. p. 197. LACUSTRE.
Muller. verm. p. 205. No. 339.
Chem. Conch. vi. t. 13. f. 135.
Shroet Flussconch. p. 191. No. 12.

C with a sub-rhomboidal, thin, pellucid, smooth shell, of a pale horn-colour, sometimes covered with a dark brown *epidermis*; rather compressed, particularly round the margin: *umbo* central, small, but extremely prominent, projecting beyond the commissure, and when the valves are closed, and the shell viewed sideways, exhibits a cordiform shape; hinge slight, teeth small, in each valve a primary tooth, one of which is plain, the other bifid; with lateral teeth in both valves, one on each side the hinge, and two additional very minute laminæ in one valve, situated as in the preceding species. Length three-tenths of an inch; breadth four-tenths.

We were first favoured with this by Mr. SWAINSON, in whose cabinet of *British shells* were several under the title of *Tellina compressa*. This gentleman informed us it was found in a river near *Bulstrode*, and that he had taken it in the river near *Longford*, but that it was scarce.

N

Since

Since that period we have taken it in a ditch, or water-course subject to be overflowed by the river *Aun*, near *Hatch*, in *Devonshire*; and in the *Avon*, at *Lackham*, in *Wiltshire*, sparingly; and lately in great abundance in a small pond under the downs, close to the village of *Wedhampton*, in the last county; where neither the *corneum* nor *amnicum* were to be found. It is remarkable this pond, which affords one or two other of the more rare shells, especially the *Helix nautiloides*, has no communication with any other water, but stands exposed at a very considerable distance from any, and much higher than any in the neighbourhood.

It is scarcely possible this shell can be confounded with the *C. corneum*, if the smallest attention is paid to the remarkable produced *umbo*, and the compressed spreading margin, independent of the sub-rhomboidal shape, most conspicuous in full-grown specimens.

There is no doubt this is the *Tellina lacustris* of MULLER, though he says it has six lateral teeth, and no middle ones. CHEMNITZ observes that a good magnifying glass is required to find all the teeth MULLER has given it, but that it has middle teeth, though they are very small.

In the larger, or full grown shells, there is no difficulty in discovering by the assistance of a good pocket lens, or *hand megascope*, the six teeth described by MULLER, as well as the central ones: but younger shells are so extremely

remely thin that the central and smaller lateral teeth are not so readily discovered.

The animal of this, as well as the two preceding, are viviparous, producing from six to twelve at a time, and are probably either androgynous or hermaphrodite, as all those we have dissected in the early part of the month of June contained perfect young. It is a *Tethys*, of a pellucid white colour, with a very long tongue-shaped foot, or *sustentaculum*, situated at the posterior end, exceeding the length of the shell when extended; by this it moves backwards by jerks, dilating and contracting it alternately: at the anterior end are two tubes close together, the longest is nearest the hinge, and is about one-fourth the length of the shell.

GEN. IX.

MACTRA.

Animal a TETHYS.

SHELL: bivalve: valves equal, inæquilateral.

Hinge: middle tooth complicated with an adjacent groove, or pit; lateral teeth remote, inserted into the opposite valve.

SOLIDA.

- Mastra folida. *Lin. Syst.* p. 1126. — *Gmel. Syst.* p. 3259. 13.
Br. Zool. t. 51. f. 43. A. — t. 52. f. 43.
Chem. Conch. vi. t. 23. f. 229. 230.
Lister Conch. t. 253. f. 87. — *Id. Angl.* t. 4.
 f. 24
Pult. Cat. Dorset. p. 31.
Don. Br. Shells. ii. t. 61.
Turt. Lin. iv. p. 211.
 Trigonella zonaria. *Da Costa* p. 197. t. 15. f. 1. 1.
 Trigonella Gallina. *Id.* p. 199. t. 14. f. 6. 6.

M. with a strong sub-triangular shell, of a yellowish-white colour; with a few concentric ridges, sides equal;

1111

umbo central; lateral teeth large, prominent. Inside glossy white. Length an inch and a half; breadth an inch and three-quarters. Worn shells frequently become deeply furrowed or zoned, with grey, or slate-colour, and sometimes yellow. In this state it is figured in the *British Zoology*, as well as the perfect shell.

DA COSTA has given the figure of a worn shell for his *Trigonella zonaria*; and the perfect shell he makes distinct by the name of *Trigonella Gallina*; and says that, it is by the common people of *Cornwall* called *Hens*. He is perhaps right with respect to the vulgar name, as we find it so called in some parts of *Devonshire*. It is therefore perfectly clear that the *Mactra Solida* of PENNANT, and the *Trigonella zonaria*, and *Gallina* of DA COSTA are nothing more than this species in various states.

It is one of the most common shells on the south coast of *Devon*, and frequently taken by the common people about *Dartmouth* for culinary use.



Trigonella subtruncata. *Da Costa*. p. 198.

Mactra Stultorum. *Br. Zool.* t.52. f.42.

2.
SUBTRUNCATA.

M. with a strong, sub-triangular, yellowish-white shell, transversely striated, with sometimes a few ridges; rounded on one side, the other more pointed and longer; *umbo* large, prominent, the sides near the beak much turned inwards, especially the anterior, which is depressed into a cordiform

cordiform shape, when the whole shell is viewed sideways. Hinge not quite central; teeth similar to the preceding species. Inside smooth, yellowish-white.

This has frequently been supposed a mere variety of the *M. solida*, and has been generally placed as such in cabinets. DA COSTA's description of it is very good. It is found in *Hampshire*, and we have picked it up on several parts of the south *Devon* coast. It seldom grows to half the size of the *solida*. Length rarely more than three-quarters of an inch; breadth an inch, and commonly much less.

When compared with the *Maclra solida* of the same size, it will be found to be more convex and angulated: the *umbo* larger: sides from the beak more straight, and turned inwards, and one end more produced.

MR. PENNANT has given a very good figure of this shell; but has erroneously made it the *Maclra Stultorum* of LINNÆUS.

STULTORUM.

Maclra Stultorum. *Lin. Syst.* p. 1226. 99.

Gmel. Syst. p. 3258. 11.

Chem. Conch. vi. t. 23. f. 224. 226.

Lister Conch. t. 251. f. 85.

Pult. Cat. Dorset. p. 31.—*Turt. Lin.* iv. 211.

Tellina radiata. *Br. Zool.* t. 49. f. 30.

Trigonella radiata. *Da Costa.* p. 196. t. 12. f. 3. 3.

M. with

M. with a thin, sub-triangular, semi-pellucid shell, faintly striated transversely; covered with a thin *epidermis*, of a light rufous-brown colour, irregularly rayed with broad and narrow whitish lines; sometimes of a reddish hue: *umbo* central, prominent, frequently of a purplish cast: *sides* nearly equal. Inside pale purple, which commonly gives a tinge of the same colour on the outside, when the *epidermis* is worn off. Length one inch and a half; breadth one and three-quarters.

According to Doctor PULTENEY, this species is found at *Poole* and at *Weymouth*. DA COSTA says *Dorsetshire*, *Cornwall*, *Cheshire*, and at the mouth of the *Mersey*; also on the coast of *Aberdeenshire* and other shores of *Scotland*. We have found it on the coast of *Caermarthenshire*, *Kent*, and *Devonshire*, but not common.

This is not the *Tellina radiata* of LINNÆUS. Mr. PENNANT was mistaken with respect to his Synonyms.



Mastra dealbata. *Pult. Cat. Dorset*. p. 31.

Mastra pellucida. *Chem. Conch.* vi. t. 24. f. 234.

Gmel. Syst. p. 3260. 21.

Turt. Lin. iv. p. 213.

4.

DEALBATA.

TAB. 5. f. 1.

M. with a thin, fragile, pellucid, oval, white shell, very finely striated, with a few coarser concentric wrinkles; the smaller end gaping a little: *umbo* not quite central, but rather nearest the larger end: middle tooth
in

in one valve broad, bifurcated, angulated close to the beak; lateral teeth not very remote. Inside glossy white, moderately concave; margin plain, edge sharp.

DoCTOR PULTENEY first noticed this species as a *British* shell: it was found by Mr. BRYER at *Weymouth*.

We have seen specimens rather larger than that mentioned by the Doctor, said to be found on the same coast. Length one inch; breadth one and a half.

From the circumstance of this shell not closing at one end, there can be very little doubt but it is the *Mastra pellucida* of CHEMNITZ, and not the *fragilis* as some have thought; indeed the description and figure given by him answers perfectly well.



- Mastra compressa.* *Pult. Cat. Dorset.* p. 31.
Trigonella plana. *Da Costa.* p. 200. t. 13. f. 1. 1.
Venus borealis. *Br. Zool.* No. 52.
Mastra Listeri. *Gmel.* p. 3261. 26.—*Turt. Lin.* iv. p. 213.
List. Con. t. 253. f. 88.—*Id. Ang.* t. 4. f. 23.
Tellina borealis. *Don. Br. Shells.* ii. t. 64. f. 1.

M. with a flat, thin, semi-pellucid, sub oval, sub-triangular shell; of a yellowish-white colour; sometimes light ferruginous, and often blackish, or banded with these colours, occasioned by the soil it is found in: is rather wrinkled irregularly than striated, and not glossy: *umbo* small,

small, central; hinge without lateral teeth; cartilage cavity large, triangular; primary teeth small; a single one locking into a bifid tooth in the opposite valve. Inside smooth, glossy, white; margin plain. Length one inch and a half; breadth two.

There is no doubt Mr. PENNANT was acquainted with this very common *British* species, though he has mistaken it for the *Venus borealis* of LINNÆUS: his other synonyms confirm this opinion. DA COSTA has erroneously considered the *Tellina crassa* and *Venus borealis* of the *British Zoology* to be the same shell; whereas the descriptions given by PENNANT, though concise, are sufficient to note the distinction.

It is remarkable, that it does not appear LINNÆUS was acquainted with this shell: and GMELIN has evidently taken it from LISTER, as he says "*Habitat ad ostium fluvii Angliæ Tees;*" and calls it *Listeri* in compliment to that author.

This is one of the most plentiful *British* species, and may almost be termed a sub-marine shell, being chiefly found at the mouths of rivers, or inlets not remote from fresh water; and though never beyond the flux of the tide, yet it delights in situations where fresh water is occasionally flowing over. It principally inhabits sludge or muddy places, buried to the depth of five or six inches.

DoctOR PULTENEY considers this to be the *Piperata Chama* of the *Latins*, *Maetra piperata*, *Gmel. Syst.* p. 3261. a shell well known in the *Mediterranean*, and greatly relished as food. It is not eaten in any part of *England* that we know of: and indeed, those we have tasted were extremely bitter.

The animal has two slender tubes of a yellowish colour, placed near together at the anterior end; one, about three inches long, is thrown about in search of food, such as insects; which may be seen passing up this transparent syphon, with the current of water it is continually taking in, and discharging at the shorter tube, placed nearer to the hinge; retaining only the nutritious matter: but it occasionally ejects the superabundant water with considerable velocity from both tubes, particularly the longest.



6.

BOYSH.

Maetra Alba. *Lin. Trans.* vi. t. 16. f. 9. to 12. (*Wood.*)

TAB. 3. f. 7.

M. with an oval, flat, thin, pellucid, glossy, white shell, almost smooth, or with a few distant, obsolete, concentric striæ: *umbo* placed nearest to the lesser end, very small, and a little turned at the apex: primary teeth one in each valve, small; cartilage cavity broad; lateral teeth in one valve only, broad, elevated. Inside smooth, glossy, white; cicatrix nearly obsolete, large, running from the smaller end two thirds across the shell, parallel with the margin. Length rather more than half an inch; breadth exceeds three-quarters.

This

This new species was first discovered by Mr. BOYS at *Sandwich*, who favoured us with several specimens: we have since found it, rarely in sand, from *Salcomb bay*, and *Biddeford bay* in *Devonshire*; and also on *Studland beach*, in *Dorsetshire*, but none so large as those on the *Kentish* coast.

M. with a strong, sub-triangular, opaque, white shell; TRIANGULARIS. TAB. 3. f. 5.
umbo prominent, obtuse; sides a little unequal: hinge strong; primary tooth in one valve large, bifid; in the other two small teeth, with a triangular cavity between; lateral ones depressed. Inside white, not very glossy, margin strongly crenated. Length one eighth of an inch; breadth rather less.

There are no perceptible striæ on this shell, yet it has very little gloss. The hinge does not strictly correspond with the characters of the genus, but we could not with more propriety place it elsewhere. It is a singular shell, and cannot be confounded for the young of any other species.

We have found it in sand from *Falmouth harbour* alive, but not common; and more plentiful, in sand, on various parts of the coast of *South Devon*.

8.

Mastra lutraria. *Lin. Syst.* p.1126.—*Gmel. Syst.* p.3259. 14. LUTRARIA.
Chem. Conch. vi. t. 24. f. 240. 241.
List. Con. t.415. f.259.—*Id. Ang.* t.4. f.19.
Br. Zool. t. 52. f 44.

- Mastra lutraria.* *Lin. Trans.* vi. t. 16. f. 3. 4. (*Wood.*)
Pult. Cat. Dorset. p. 32
Don. Br. Shells. ii. t. 58.
Turt. Lin. iv. p. 211.—*Schroet Flussch.* t. 2. f. 1.

M. with an oblong-oval, yellowish-white shell; with irregular concentric striæ; sometimes almost smooth, with only a few small ridges; others more strongly ridged, especially at the shorter end: *umbo* small, placed nearer to one end, from which both sides slope a little: tooth in one valve triangular, no lateral teeth. Inside glossy white; gaping a little at both ends.

This species has frequently been confounded with the *Mastra hians*. It is not uncommon on many parts of our coast, especially near the influx of rivers: is found remarkably large near *Laugharne* on the coast of *Caermarthen*, and in great abundance: also in some parts of *Cornwall*, but more rare on the south coast of *Devon*, and in *Dorsetshire*. Not unfrequently taken above two inches and a half long, and five broad. It is rarely obtained alive, except by digging, and that only when the tide is unusually low: their place of concealment is generally known by a dimple on the surface, through which they eject water to a considerable height; though the shell is frequently buried two feet beneath. The animal of this and the following species, being an *Ascidia*, makes a deviation from the generic character in that respect; it is large, and protrudes several inches at the smaller end in search of food; frequently not less than seven or eight.

Mastra

Mastra hians. Pult. Cat. Dorset. p. 32.

Lin. Trans. vi. t. 16. f. 5. 6. (*Wood.*)

Chama magna. Da Costa. p. 230. t. 17. f. 4.

Mya oblonga. Gmel. Syft. p. 3221. 10.—*Turt. Lin.* iv. p. 177.

Chem. Conch. vi. t. 2. f. 12.—*Gualt.* t. 90. A.

Hians.

M. with a strong, oblong shell, with rugose, concentric wrinkles, most so at the end remote from the hinge; opaque, dark-brown, with frequently a rufous tinge; sometimes dark cinereous, and when recent, covered with a thick, dusky *epidermis*: *umbo* small, placed near to one end; the upper margin next to the hinge somewhat arcuated; hinge furnished with one flattish tooth, grooved on the fore part, locking in between two in the opposite valve, the smallest of which is bifid; the cavity to which the connecting cartilage is fixed, is large and triangular; no lateral teeth. Inside white, with a strong, elevated ridge along the upper side of the cicatrix: the longer end very considerably gaping. Length two inches and a quarter; breadth five inches.

It is very remarkable, shells so materially different as the *Mastra lutraria* and this, should have been so confounded. DA COSTA has given a figure of the *M. hians* with most of the synonyms of the *lutraria*, and has not described that shell at all. GMELIN expresses a doubt, whether it is not a variety of the *Mya arenaria*. Most assuredly that author had never examined this shell, or he could not have expressed such a doubt, as no two can be more distinct; and had he not quoted a tolerably good figure in
CHEMNITZ,

CHEMNITZ, we could not have supposed he intended this shell.

This species was given the name prefixed to it by Doctor SOLANDER, as we are informed by Doctor PULTENEY, who has very well defined the distinction between this and the *lutraria*, by observing, that the hinge is placed much nearer to the posterior side; is always sinuous, or much hollowed on the margin below the hinge, towards the anterior or long side. It is a much more rude and rough shell; and is distinguished farther, by a strong thick rib on the inside, running in a curved direction from the edge, towards the hinge. And adds, that the markings of the cicatrix of the animal, is of a different figure from that of the *M. lutraria*: a circumstance not sufficiently adverted to, as yet, in the description and distinction of shells. We may add to this definition, that the tooth is not triangular, as in that species,

This appears to be a local shell; it is not uncommon in the river between *Truro* and *Falmouth* in *Cornwall*; and is frequently brought up with the sea-sand to the former place, which is there collected for manure. We have also found it in *Falmouth* harbour not so common, and rarely double valves: live shells are seldom taken; from which we conclude it penetrates deep in the sand. Doctor PULTENEY speaks of it as not uncommon on the *Dorset* coast; and single valves are sometimes found on the shores of *Devonshire*.

GEN.

GEN. X.

DONAX.

Animal a TETHYS.

Shell: bivalve: anterior margin very obtuse.

Hinge: with two teeth in the middle, and one lateral tooth remote.

- Donax Trunculus. *Lin. Syst.* p.1127.—*Gmel. Syst.* p.3263.4. TRUNCULUS.
Br. Zool. t. 55. f. 45.
Pult. Cat. Dorset. p. 32.—*Gualt.* t. 88. O.
Lin. Trans. vi. t. 16. f. 13.—16. (*Wood.*)
Chem. Conch. vi. t. 26. f. 253.
Farvan. t. 49. E 2.
Lister Conch. t. 376. f. 217.—*Id. Angl.* t.5.
 f. 35.
Don. Br. Shells. i. t. 29. f. 1.
Turt. Lin. iv. p. 214.
 Cuneus vittatus. *Da Costa* p. 207. t. 14. f. 3.

D. with an oblong, smooth, glossy shell, finely striated longitudinally, covered with a thin *epidermis*, most times
 of

of a light yellowish colour, fasciated with purple, with two or three faint white rays from the beak: some are wholly yellow, with darker fasciæ; *umbo* small, placed nearest to the lesser end: teeth small, lateral one not very remote. Inside partakes of the colour of the exterior; those banded with purple are of that colour within, the others quite yellow like the outside; margin crenated; valves not very concave.

This is not an uncommon species on many of our sandy shores: plentiful between *Laugharne* and *Tenby* in *Wales*, and on *Dawlish Warren* in *Devonshire*; more rare westward, and in *Cornwall*. In *Dorsetshire* not common. Length most generally five-eighths of an inch: breadth one inch and a quarter; sometimes, though rarely, an inch and a half.



2.

DENTICULATA.

- Donax denticulata*. *Lin. Syst.* p.1127.—*Gmel. Syst.* p.3263.6.
Br. Zool. t.55.f.46 — *Turt. Lin.* iv.p.215.
Pult. Cat. Dorset. p. 32.
Lifter Conch. t. 376 f. 218. 219.
Gualt. t. 89. D.—*Favan.* t. 49. E. 3.
Chem. Conch. vi. t. 26. f. 256.
- Cuneus truncatus*. *Da Costa.* p. 205.
- Donax crenulata*. *Don. Br. Shells.* i. t. 24.

D. with a very strong, thick, sub-cuneiform shell, striated longitudinally; the interstices punctated, or transversely striated; with usually a few broad purple rays from the

the beak; the larger end much sloped and truncated; at which part the striæ run transversely, and somewhat undulated: a prominent ridge upon the angle of the slope, running from the beak to the opposite margin: *umbo* placed near to the larger side: hinge furnished with strong teeth: a lateral tooth on each side the middle ones. Inside purple, very concave under the *umbo*; margin denticulated. Length about six-eighths of an inch; breadth one inch.

DÀ COSTA must certainly have been deceived in saying, it is frequent on most of our shores, and that he had received it from *Effex, Suffex, Cornwall*, and other western coasts, the isles of *Scilly, Yorkshire*, and from *Wales*; also from *Aberdeenshire*, and the *Orkney* islands in *Scotland*; and from the shores of the county of *Cork* in *Ireland*.

However this may be, few of our conchological friends ever found it, and it is in general esteemed so rare that many have doubted its existence as a *British* species. We confess it has never fallen within our researches.

DOCTOR PULTENEY says it was found at *Weymouth*; and Mr. BRYER, a diligent observer of nature, favoured us with several specimens, which he assured us he picked up on the coast of that place; one of which was intirely white, another plain purple without rays.

This species is much stronger and thicker than the *Trunculus*, the striæ more conspicuous, is much longer

in proportion to its breadth, and is at once distinguished by its truncated, cuneiform shape.



3.

COMPLANATA.

TAB. 5, f. 4.

Tellina variegata, unico radio, five plagula albescente conspicua. *Lister Conch.* t. 384. f. 227.

D. with an oblong, smooth, and extremely glossy shell, of a light yellow, or faint purplish colour, with small spots or streaks of white, and one broad ray of the same from the beak to the opposite margin, edged with ferruginous: in some a few distant transverse striæ, nearly obsolete, are observable; but no longitudinal ones: *umbo* placed nearest to one end: teeth small, especially the lateral ones. Inside purple, margin quite smooth. Length five-eighths of an inch; breadth an inch and a quarter.

This elegant species has much the habit of the *Trunculus*, and no doubt has been sometimes confounded with it; from which, however, it is readily distinguished by being rather more flat, by the shorter end being more produced, in not having any longitudinal striæ, and the margin not being crenulated; as well as by the invariable single white ray from the *umbo*. It is a rare shell, and not noticed by any one, we believe, except LISTER.

We have found it sparingly on *Milton* sands, on the *South Devon* coast, and at *Falmouth*; and believe it is sometimes met with on the shores of *Dorset*, as we observed

ferred it in the collection of a friend chiefly made on that coast; placed indiscriminately with the *Trunculus*.

In a live, or recent state, it is covered with a highly polished *epidermis* of a yellowish colour, which gives to the white markings a tinge of the same. In the specimens we have collected, it is sometimes observed to be banded concentrically with lighter and darker shades.

It is in the cabinet of Mr. SWAINSON under the title of *Donax lævigata*; but we were unwilling to retain that name, lest it might be confounded with the *D. lævigata* of GMELIN, which is a very different shell. This gentleman informed us he received it from *Loce* in *Cornwall*.



Donax plebeia. *Pult. Cat. Dorset*. p. 32.
Lister Conch. t. 389. f. 128?

4.
PLEBEIA.
TAB. 5. f. 2.

D. with a thick, strong, oblong, sub-oval shell, of a dull yellowish horn-colour, smooth, and glossy, except a few distant concentric furrows; most commonly marked with two brown stripes longitudinally from the beak: *umbo* placed nearest to one side; teeth very strong. Inside glossy, paler than the outside; margin smooth. Length scarce half an inch, breadth three-quarters.

Doct^r PULTENEY, (to whom we are obliged for the first specimen of this shell) says, it was found at *Weymouth*, by the late *Dutchess Dowager of Portland*; and observes,

P 2

that

that it is remarkably distinguished by the size of the teeth, which are very large for so small a shell.

This species has been more recently found on the coast of *Dorset*; as we are assured by Mr. BRYER, who has himself taken it on the shore at *Weymouth*; and who favoured us with a specimen, which is white, and the two rays very faint.



5.
BRIT.

- | | | |
|---------|---------------|---|
| Donax | Irus. | <i>Lin. Syst.</i> p. 1128.
<i>Gmel. Syst.</i> p. 3265. 11.
<i>Pult. Cat. Dorset.</i> p. 32.— <i>Gualt.</i> t. 95. A.
<i>Don. Br. Shells.</i> i. t. 29. 2. 2.
<i>Turt. Lin.</i> iv. p. 216.
<i>Chem. Conch.</i> vi. t. 26. f. 268. 270. |
| Tellina | Cornubiensis. | <i>Br. Zool.</i> No. 35.— <i>Bor. Corn.</i> t. 38. f. 23. |
| Cuneus | foliatus. | <i>Da Costa.</i> p. 204. t. 15. f. 6. left hand. |

D. with a sub-oval opaque, rugose, whitish shell, with high concentric membranaceous ridges reflecting upwards, broken or undulated; interstices between finely striated longitudinally: *umbo* small, placed near to one end; *apex* much turned: teeth small, bifid, one excepted. Inside white, or flesh-colour; generally with dark purple about the hinge, and towards the longer side; sometimes wholly of that colour: margin plain.

No shell perhaps varies more in shape than this, sometimes it is nearly as long as it is broad: others in breadth doubly

doubly exceed the length, are almost cylindric, and very convex; many are flat and greatly distorted; yet, notwithstanding scarce two are found alike, the specific characters are strongly marked. Worn shells are sometimes purple on the outside as well as within.

This species perforates the hardest lime-stone, where it is sometimes lodged in great abundance: we have found detached pieces of such stone thrown upon the coast of *Devonshire*, especially about *Plymouth*, perforated like a honey-comb, with these shells in it. It is also found in some parts of *Cornwall*.

DoCTOR PULTENEY speaks of it as plentiful on the *Dorset* coast in clay, as well as in lime-stone. It rarely exceeds half an inch in length; and three-quarters in breadth.

DA COSTA has quoted the *Tellina cornubiensis* of PENNANT, and BORLASE for his *Pectunculus truncatus*, in which he has certainly erred; and indeed his shell seems to be in perfect obscurity. The general description might answer very well for a worn specimen of the *Donax Irus*, but the margin being notched forbids it.

GEN. XI.

VENUS.

Animal a TETHYS.

SHELL; bivalve, the anterior margin of the lip of one valve sometimes incumbent on the other.

Hinge, with three approximating teeth; the lateral, diverging from the *apex*.

Umbonal, and sub-umbonal regions distinct.

1.
PAPHIA.

- Venus Paphia. *Lin. Syst.* p. 1129. — *Gmel. Syst.* p. 3268.
Chem. Conch. vi. t. 27. f. 274 278.
Pult. Cat. Dorset. p. 33. — *Gualt.* t. 85. A.
Turt. Lin. iv. p. 218.
 Pectunculus fasciatus. *Da Costa.* p. 188. t. 13. f. 3.
 Vetula. *Id.* p. 190. t. 13. f. 5. 5.

V. with a strong, somewhat flat, sub-orbicular shell, with several broad and much elevated ridges, variously streaked, or rayed with brown, purple, red, or yellow, intermixed with white: *umbo* central, *apex* much turned to one side, beneath which is a cordiform depression: the cartilage

cartilage slope in one valve frequently streaked transversely: hinge furnished with strong teeth. Inside smooth, glossy white, or flesh colour, with sometimes a brown mark at one end: margin crenulated.

This species appears subject to much variety; in some the ridges are broad, and nearly flat, others narrower, and turn a little backwards, so much resembling the *Venus Paphia* of LINNÆUS, that we are inclined to believe, with DOCTOR PULTENEY, that it must be considered as that shell in a depauperated state. It rarely exceeds seven-eighths of an inch in length; and one inch in breadth. In comparing the foreign *V. Paphia* with this shell, we perceive in the inside the same shaped *cicatrix*, which is an essential specific character, not sufficiently attended to.

DA COSTA'S *Pectunculus fasciatus* is evidently this shell, but his specimens must have been worn, or he would not have described the margin plain. The *Pectunculus Vetula* of the same author, is only a more perfect variety, with stronger ridges and markings.

It is not uncommon in some parts of *Cornwall*; frequent about *Falmouth*, but more plentiful on the south coast of *Devon*, particularly on *Milton* sands.

DOCTOR PULTENEY speaks of it as a rare shell on the *Dorset* coast. An elegant variety, radiated all over with double and treble lines, we have found on the western shores.

Venus

VERRUCOSA.

Venus verrucosa.

Lin. Syst. p. 1130.—*Gmel. Syst.*
p. 3269. 6.—*Gualt.* t. 75. H.*Lin. Trans.* vi. t. 17. f. 5. 6. (*Wood*)*Pult. Cat. Dorset.* p. 33.*Don. Br. Shells.* ii. t. 44.*Chem. Conch.* vi. t. 29. f. 299. 300.*List. Conch.* t. 284. f. 122.*Favos.* t. 47. E. 9.*Turt. Lin.* iv. p. 219.

Venus Erycina.

Br. Zool. t. 54. f. 48, 48 A.*Borlase Corn.* p. 278. t. 28. f. 32.

Pectunculus strigatus.

Da Costa p. 185. t. 12. f. 1. 1.Pectunculus membranaceus. *Id.* p. 193. t. 13. f. 4. left hand.

V. with a strong, thick, heavy, sub-orbicular, convex, rugose shell, with numerous, strong, elevated ridges, somewhat recurved, and broken at the ends, (particularly the anterior) into irregular warty knobs: *umbo* turned much to one side; beneath which is a strong cordiform depression; the cartilage slope of the left valve turns inward, slightly striated longitudinally, and marked transversely with brown streaks. Inside smooth, white; margin finely crenated.

Diameter from the *umbo* to the opposite margin two inches and a quarter; breadth rather more. The colour is generally of a dirty white, but sometimes of a dark rusty brown, mostly towards the posterior end. Young shells of an inch diameter have the ridges much more perfect and distinct, and the interstices are prettily crenulated.

This

This species is not uncommon on some parts of the *Cornish* coast, particularly at *Falmouth*, but rarely alive, though frequently with the valves united. We have also found it on the south coast of *Devon*, and in *Dorsetshire*; and have received small worn specimens from the coast of *Kent*. In this mutilated state it has sometimes been considered a distinct species, as is the case with respect to the *Pectunculus membranaceus* of DA COSTA.

It is a common shell in the *Mediterranean*.



Pectun. striatulus. *Da Costa* p. 191. t. 12. f. 2. 2.

3.
STRIATULA.

Pectun. fulcatus. *Da Costa* p. 192.

Venus Gallina. *Gmel. Syst.* p. 3270.—*Turt. Lin.* iv. p. 120.

Chem. Conch. vi. t. 30. f. 308. 310.

Lijter Conch. t. 282. f. 120. & t. 295. f. 131.

Lin. Trans. vi. t. 17. f. 7. 8. (*Wood.*)

Gualt. t. 75. O.

Venus rugosa. *Br. Zool.* t. 56. f. 50.

Venus Casina. *Pult. Cat. Dorset.* p. 33.

Venus striatulus. *Don. Br. Shells.* ii. t. 68.

V. with a strong, sub-cordated shell, with numerous fine, prominent, recurved, concentric striæ: colour white, or yellowish-brown, rayed with a few rufous-brown stripes from the *umbo*, and frequently marked with fine, close-set, zigzag streaks of the same colour, that make it appear crenated: this is a pretty general character; however, it is sometimes quite plain, without being radiated or streak-

Q

ed:

ed: *umbo* turns much to one side, beneath which is a cordiform depression: the cartilage slope much depressed, almost smooth, or faintly striated longitudinally. Inside white; margin finely crenated. Length rather more than an inch; breadth an inch and a quarter. A variety is rayed with brown and white.

This species appears to be common on many parts of our coasts. DA COSTA speaks of it, from *Cheshire, Yorkshire, Flintshire, the isles of Scilly, Caernarvonshire, Cornwall, and Dorsetshire*. In the two last places we have found it not uncommon, as well as on the shores of *Devon, Caermarthenshire, and other parts of the south coast of Wales*.

4.

ISLANDICA.

Venus Islandica. *Lin. Syst.* p. 1131.—*Gmel. Syst.* p. 3271.
Pult. Cat. Dorset. p. 33.—*Gault.* t. 85. B?
Don. Br. Shells iii. t. 77.—*Turt. Lin.* iv. p. 221.
Chem. Conch. vi. t. 32. f. 341. 342.
List. Conch. t. 272. f. 108.—*Id. Angl.* t. 4. f. 22.
Lin. Trans. vi. t. 17. f. 1. 2. (*Wood.*)

Venus mercenaria *Br. Zool.* t. 53. f. 47.

Pectunc. crassus. *Da Costa* p. 183. t. 14. f. 5.

V. with a strong, thick, sub-orbicular, convex, white shell, wrought with irregular concentric striæ; covered with a rough, but glossy yellowish-brown, or dusky *epidermis*: *umbo* pointed, turned inwards, and curved to one side: no cordiform depression. Inside smooth, white; margin plain. Length three inches and three-quarters; breadth four inches and a quarter.

This

This species is not uncommon on many parts of our coast, but is rarely taken alive, except by dredging in deep water. Is plentiful on the sandy, flat shores of *Caermarthenshire*; rarely in *Devonshire* and *Cornwall*, but on some parts of the *Dorset* coast is thrown up in great numbers, as we are informed by Doctor PULTENEY. It is also found on some of the shores in the north of *England* and *Scotland*.

This is not the *Wampum* shell of the *Americans*; that is the *V. mercenaria* of LINNÆUS, and has never been found on our coasts.



5.

- Venus Chione. *Lin. Syst.* p. 1131.—*Gmel. Syst.* p. 3272. 16. CHIONE.
Pult. Cat. Dorset. p. 33.—*Favan.* t.47. B.
Chem. Conch. vi. t. 32. f.343.—*Gualt.* t.86.A.
Lijter Conch. t. 269. f. 105.
Don. Br. Shells i.t.17.—*Turt. Lin.* iv.p.222.
Lin. Trans. vi. t. 17. f. 3. 4. (*Wood.*)
Pectunc. glaber. *Da Costa.* p. 184. t. 14. f. 7.

V. with a strong, sub-cordated shell, somewhat wrinkled concentrically, but covered with an extremely smooth, glossy; chestnut-coloured *epidermis*, more or less radiated with a darker shade: *umbo* placed nearest to one end; *apex* turned sideways, beneath which is a strong cordiform depression. Inside white, glossy; margin plain; edge obtuse. Length three inches; breadth three quarters of an inch more.

Q 2

This

This beautiful species has been esteemed rare in *England*; is mentioned as a *Dorsetshire* shell by DA COSTA and DOCTOR PULTENEY. It is however a very common species in *Falmouth* harbour, in *Cornwall*; and is taken in abundance amongst the heaps of sand brought in by the barges for manure; frequently live specimens: we have seen more than fifty in one heap.

Amongst these are found some of a lighter colour, with the rays broken into spots, much like the *Venus maculata*; and, as DOCTOR PULTENEY observes, might well pass for the northern depauperated variety of it.

In *Cornwall* is called *Queens*. Becomes scarce eastward, having never found it on the coast of *Devon*, except a few single valves, very much worn.

6.

EXOLETA.

Venus exoleta. *Lin. Syst.* p. 1134.—*Gmel. Syst.* p.3284. 75.
Br. Zool. t. 54. f. 49. A. & t. 56. f.49.
Pult. Cat. Dorset. p. 34.—*Farvan.* t.48. F.1?
Chem. Conch. vii. t. 38. f. 402. 404. 405. 407.
Lister Conch. t. 290. f. 126.—t.291. f.127.—
t.292. f.128.—t.293. f.129.—*Gualt.* t.75.F
Dcn. Br. Shells. ii. t. 42. f. 1.
Turt. Lin. iv. p. 233.
Lin. Trans. vi. t. 17. f. 9. 10. (*Wood.*)

Venus lineata. *Pult. Cat. Dorset.* p. 34.

Pecten. capillaceus. *Da Costa.* p. 187. t. 12. f. 5. 5.

V. with a strong, orbicular shell, with fine, close-set, thread-like concentric striæ, sometimes with a few ridges,
or

or interslices, rather broader and deeper than the rest; most commonly of a light colour, but rarely quite white; some are quite plain, others faintly radiated, or streaked all over with rufous-brown; and not unusual with two or three broad rays only: it is moderately convex: *umbo* much turned to one side, beneath which is a short, much depressed, cordiform impression. Inside smooth, white; margin plain. Diameter two inches. Younger shells slope more from the *umbo* on the anterior side, and in this state it was made a distinct species in the *Museum Portlandicum* by the name of *Venus lineta*; which induced our late worthy friend Doctor PULTENEY to do the same.

This slope however is rarely found after the shell exceeds an inch and a quarter in diameter, when it gradually increases to rise at that part. The tongue, or *cicatrix*, which is almost an invariable specific character, is alike in both; it is long, somewhat taper, and runs into the middle of the shell more than half way across.

It is not an uncommon species on many parts of our coast; is plentiful in *Cornwall*, especially about *Falmouth*; and on the shores of *Devonshire*, but scarcer in *Dorsetshire*; we have also found it in abundance on some parts of the coast of *South Wales*.



Venus undata. *Br. Zool.* t. 55. f. 51.—*Turt. Lin.* iv. p. 233. UNDATA.
Lin. Trans. vi. t. 17. f. 17. 18. (*Wood.*)

V. with

V. with an orbicular, thin, white shell, with fine, concentric, irregular striæ, which sometimes run into uneven wrinkles: young shells a little glossy: *umbo* prominent; *apex* pointed, and turning a little to one side, without any cordiform depression: hinge strong in proportion to the substance of the shell: in one valve three teeth; in the other two. Inside smooth, glossy, moderately concave; margin smooth; edge acute, and somewhat undated, by a small projection of the lip opposite the hinge, from which runs a broad *cicatrix* into the middle of the shell.

This species, described hitherto only by Mr. PENNANT, has been confounded with the *Tellina rotundata*, but may readily be distinguished by the hinge, and particularly the *cicatrix* in the inside, that shell being wholly destitute of such a mark: the *umbo* is also turned more to one side. We have mentioned before, that Doctor PULTENEY has described the *Tellina rotundata* for this shell, as is evident by his calling it *Tellina undata*, and quoting the *Venus undata* of PENNANT: indeed he is not singular in this respect, for we have seen it in more cabinets than one placed as such. This shell does not appear to be a plentiful species, but we have found it at *Falmouth*, and on the coast of *South Devon*, as well as in *Biddeford* bay: but no where so fine as on the shores of *Caermarthenshire* near *Laugharne*.

Diameter from the hinge to the opposite margin, an inch and a quarter; breadth near a quarter of an inch more.

Young

Young shells are frequently very white and pellucid; the larger ones yellowish-white, sometimes tinged with light ferruginous, and rather opaque.



8.

Venus tigerina. *Lin. Syst.* p. 1133.—*Gmel. Syst.* p. 3283.69. TIGERINA.
Chem. Conch. vii. t. 37. f. 190. 191. TAB. 4. f. 1.
Lister Conch. t. 337. f. 174—*Gualt.* t. 77. A.
Pult. Cat. Dorset. p. 34.—*Favan.* t. 47. D. 1.
Turt. Lin. iv. p. 231.

V. with a sub-orbicular, flat, lenticular, thin, white shell, sometimes with a tinge of purple on the edges; striated longitudinally, crossed with numerous fine striae, most conspicuous in the interstices, which gives it a reticulated appearance: *umbo* small, pointed, and turns a little to one side: hinge strong for the substance of the shell. Inside smooth, glossy white; *cicatrix* small, and nearly obsolete: margin plain. Length three-quarters of an inch; and seven-eighths wide.

We were first favoured with this elegant species by DOCTOR PULTENEY, who said it was found at *Weymouth*, *Studland*, and on the north shore at *Poole*: Have since received specimens from Mr. BRYER, who picked them up on the sands between *Weymouth* and *Portland*.

West Indian specimens are much larger, sometimes three inches broad.

Venus

9.
SINUOSA.

Venus sinuosa. *Br. Zool.* t. 55. f. 51. A.

V. with thin, convex shells, with a very deep, obtuse *sinus* or bending, on the front.

Mr. PENNANT is the only author who has described, or figured, this species, from whom we have taken the above description: the breadth of the figure is three-quarters of an inch; the length not so much. We confess this shell is much in obscurity, and perhaps is only an accidental distortion of some other species. It is stated to have been in the *Portland* cabinet. DONOVAN has given the *Tellina flexuosa* of this work for the *Venus sinuosa* of the *British Zoology*.



10.
OVATA.

Venus ovata. *Br. Zool.* t. 56. f. 56.

Cardium striatum radiatum. *Walk. Min. Shells.* f. 82.

V. with a sub-oval, opaque, brown shell, somewhat compressed; with strong, costated striæ longitudinally, and more finely striated transversely, causing tuberculated elevations on the ribs: *umbo* nearly central, *apex* turning a little to one side, beneath which is a sub-cordiform depression elevated in the middle; sides nearly similar. Inside glossy white, or flesh-colour; sometimes fine purple in the centre; margin slightly crenated. Length three eighths of an inch; breadth, half an inch.

We have found this very pretty shell at *Falmouth*, and on the south coast of *Devon*. Mr BOYS also favoured us with

with it from *Sandwich*, for WALKER's shell above quoted, and remarked that it was not uncommon upon that coast. The hinge of this species was certainly not duely attended to by Mr. WALKER, or he was not provided with perfect specimens, for it has all the characters of a *Venus* and not the least of a *Cardium*.



11.

V. with a sub-orbicular, somewhat compressed, flesh-MINIMA.
coloured shell; very glossy, with broad, concentric striae: TAB. 3. f. 3.
from the beak two white lines run half way down the shell, in shape like the letter V meeting at the *apex*; at the extremity of each line is a red streak, diverging outwards to the margin. In some the white lines are wanting, but we have never seen it without the two spots near the margin: *umbo* prominent, pointed, a little turned to one side. Inside glossy white; margin plain. Length a quarter of an inch; breadth rather more.

This shell is very thick and strong in proportion to its size, and the teeth very conspicuous. It is a rare species, which we have only found sparingly at *Falmouth*, dredged from the harbour, alive.



12.

V. with a strong, sub-cordated, white shell, with strong, SUBCORDATA.
longitudinal, collated striae, and remote transverse ridges, TAB. 3. f. 1.
making the depressions between of a long square, and gives the shell a pretty, cancellated appearance: *umbo* placed nearest to one end, much incurvated, and turned a little to one side; the anterior side almost straight, and much
R flogging

sloping from the beak: cartilage slope large, turned inwards, nearly smooth, and glossy. Inside glossy white; teeth very strong; margin sub-crenated; valves moderately concave. Diameter a quarter of an inch.

We give this species with some doubt, with respect to its being really *British*. It is however but right to mention that we once found it in the sand from *Falmouth* harbour.



13.
GRANULATA.

Venus granulata. *Gmel. Syst.* p. 3277. 33.

Don. Br. Shells iii. t. 83.

Turt. Lin. iv. p. 226.

Venus Marica spuria. *Chem. Conch.* vi. t. 30. f. 313.

Venus Marica. *Born. Mus.* t. 4. f. 5. 6.

V. with a thick, sub-orbicular shell, strongly reticulated: colour white, variegated with spots and streaks of dark chocolate-brown: *umbo* much turned to one side, beneath which is a cordiform depression; the cartilage slope most frequently marked with a few distinct, transverse, dark lines. Inside glossy, dark purple; margin crenulated; *cicatrix* short, conic. Length seven-eighths of an inch; breadth one inch.

Mr. DONOVAN has given a figure of this shell, which he says was found in *Cornwall*.

Two instances only have occurred to us, both dead specimens:

specimens: these we took out of sand from *Falmouth* harbour.

It has generally been considered as an *American* shell.



Venus deflorata. *Lin. Syst.* p. 1133. 132.

Gmel. Syst. p. 3274. 24.—*Favon.* t. 49. P.

Br. Zool. t. 57. f. 54.—*Turt. Lin.* iv. p. 224.

Chem. Conch. vi. t. 9. f. 79.—82. & 83?

Lijter Conch. t. 425. f. 273.—*Gualt.* t. 85. f. G?

14.

DEFLORATA.

Tab. C. f. 4.

V. with an oblong, sub-oval, thin shell, of a yellowish-white colour; tinged, or faintly radiated, with purple, strongest about the *umbo*; with undulated, longitudinal striae, and a few transverse wrinkles, which gives it a reticulated appearance, particularly at the anterior end: *umbo* placed a little to one side, not very pointed, nor reclined. Inside purplish, most so at the smaller end, and is frequently on that part highly coloured; hinge with two teeth in each valve, one of which is large, the other extremely small.

Mr. PENNANT is the only one who has mentioned this as a *British* shell.

We found a perfect, recent, specimen at *Falmouth*, it was dredged from the harbour of that place, but is no doubt a very rare species in *England*. Length one inch; breadth an inch and three-quarters. Foreign shells are generally higher coloured and more radiated.

- Venus decussata. *Lin. Syst.* p.1135.—*Gmel. Syst.* p.3294.135.
Pult. Cat. Dorset. p 34.
Don. Br. Shells ii. t.67.—*Turt. Lin.* iv. p.241
Chem. Conch. vii. t. 43. f. 455. 456.
List. Conch. t.423. f.271.—*Id. Ang.* t.4. f.20.
Gualt. t. 85. C. E. I. L.
Lin. Trans. vi. t. 17. f. 11. 12. (*Wood.*)
- Venus litterata. *Br. Zool.* t 57. f 53.
- Cuneus reticulatus. *Da Costa* p. 102. t. 14. f. 4. 4.

V. with a sub-oval, sub-rhomboidal, strong, reticulated shell, somewhat angulated or cut off diagonally at the anterior end: at which part it is most strongly decussated: *umbo* placed nearest to one end; *apex* turned to one side; beneath which is a slight, lanceolate, cordiform depression. Inside smooth, white, frequently with a little purple on the margin under the cartilage, and at the truncated end: the front margin is divided from the middle by a slender smooth line, that forms a broad border, and surrounds the *cicatrix*; this mark is broad, runs nearly into the middle of the shell, and is divided from the border, to its origin: hinge furnished with three teeth in each valve, one of which is small, and in one valve is almost obsolete in the larger shells; the other teeth are strong and most commonly bifid; middle one always so.

This species is generally of a plain rusty-brown colour, but sometimes marked with sort of characters, or zigzag lines: the longitudinal striæ are coarse, and are scarcely decussated in the middle part of the shell; the ends are frequently

quently so strongly reticulated as to cause small warts or tubercles.

Is common on many parts of our coast, and usually confounded with the following species: the finest we ever saw, were taken in the inlet between *Kingsbridge* and *Salcomb*, and at the mouth of the *Aun*, in *Devonshire*: they lay in shallow water, or about mid-tide, sometimes buried an inch or two under the shingle; and not uncommonly exposed on the surface: size of the largest, two inches in length; and three in breadth.

The animal is furnished with two tubes, an inch or more in length, which it protrudes in search of food; these are divided to their origin.



Chem. Conch. vii. t. 42. f. 439.

Lin. Trans. vi. t. 17. f. 13. 14. (*Wood.*)

16.

PULLASTA.

V. with a sub-oval, finely decussated shell; the anterior end sub-truncated, or somewhat angulated like the last; indeed it is so nearly allied to the *Venus decussata*, that it has generally been confounded for the same.

The principal distinctions are, that this does not grow to the size of that shell; the striae in both directions are much finer, regular, and equal on all parts except at the anterior end, where it frequently runs into transverse ridges: the teeth are nearly similar, but in general are
more

more regular and more approximating: the *cicatrix* is rather longer, as it exceeds half the breadth of the shell; and is joined, or very nearly runs into the marginal border (mentioned in the description of the other species) for half its length from its base.

It is a much more elegant shell, especially when young, variegated with cinereous, brown, or purple zigzag lines; and sometimes radiated with the same from the hinge to the opposite margin; the ground colour of the older shells is usually brown, the younger ones white, sometimes with only a few markings at the anterior end. The utmost size is an inch and three-eighths in length; and two inches in breadth: it is most commonly broader in proportion to its length than the *V. decussata*, but we do not perceive the material distinction upon a general review, in the teeth, that Mr. WOOD seems to express between these two shells; and must confess the gradations in this respect run so much into each other that no leading character can be drawn from them.

This gentleman however is the first *English* author who has properly divided these shells; to whose definition may be added, that the great leading character besides the structure, and situation of the *cicatrix*, is the formation of the animal inhabitant: that of the *V. decussata* (as before stated) is possessed of two separate tubes, whereas the tubes of this are not quite so long, and connected almost their whole length, except at the tip.

This

This species is found with the last, is frequently eaten by the common people, and in some parts of *Devonshire* indiscriminately called *Pullers* or *Pullets*.

There is very little doubt some of the elegant varieties of this shell, have been described under other denominations: the figure we have referred to in CHEMNITZ is exactly the shape of ours of that size; and we have seen it very similar in markings. In our possession are other varieties, with all the markings of *Venus Textrix* of the same author, vol. vii. tab. 42. fig. 443. the first is quoted by GMELIN for the *Venus litterata*; whether ours is a depauperated shell of that species, is not easily determined.



V. with a sub-rhomboidal shell, concentrically striated, running into strong wrinkles or ridges at the anterior side; sometimes, though rarely, with very fine longitudinal striæ; colour light brown: *umbo* very near to one end, small, and turned a little sideways: the longer side much truncated: hinge furnished with three teeth in each valve, one of which is small, the others very long, slender, and curve outwards, middle tooth a little bifid. Inside smooth, white, with generally some purple at the truncated end; margin plain: *cicatrix* large, running from the anterior side half way across to the opposite end; valves moderately concave.

17.

PERFORANS.

TAB. 3. f. 6.

This species, at first sight, might readily be confounded with

with the young of the *V. decussata*; but the slender and re-curved teeth is a discriminating character, if all others were wanting. It rarely exceeds three-eighths of an inch in length; and five-eighths in breadth. With respect to shape, it is difficult to fix any as a permanent character; it is however most frequently sub-rhomboidal; sometimes nearly as long as it is broad, generally straight on the front margin, but in some instances deeply sinuous or indented; not very unlike Mr. PENNANT's figure of the *Venus sinuosa*.

We found this species in abundance on the shore near *Plymouth*, burrowed in hard lime-stone, detached fragments of which were perforated in all directions, and stuck full of them.



18.

VIRGINEA.

Venus Virginea. *Lin. Syst.* p.1136.—*Gmel. Syst.* p.3294. 136.

Pult. Cat. Dorset. p. 34.

Turt. Lin. iv. p. 241.

Chem. Conch. vii. t. 42. f.443. & t. 43. f.457.

a. b. c.—*Br. Zool.* t.55. without number?

Lister Conch. t. 403. f. 247.

Cuneus fasciatus. *Da Costa* p. 204.

V. with a strong, sub-oval shell, transversely striated; the striae in some specimens, interrupted in a few places by a deeper furrow: colour various, most commonly of a pale rufous-brown, streaked and spotted in a very pretty manner, with ferruginous, or dull purplish-brown: sometimes with a few interrupted rays or zigzag lines: and rarely

rarely of a fine blush-colour, with two or three white, longitudinal streaks: *umbo* placed much to one side, beneath which is a lanceolate, cordiform depression; hinge with three teeth in each valve, the outer ones a little diverging, middle one bifid. Inside white, frequently tinged with blush-colour; margin plain; edge obtuse; *cicatrix* nearly cylindrical, running from the anterior side, not quite half way across towards the opposite end.

This species is not so common as the *decussata*, but is sometimes taken in the same places. We have found it in some parts of *Cornwall*, and rarely in *Devonshire* and *Dorsetshire*.

Those from *Guernsey* are extremely beautiful.

19.

Venus aurea. *Gmel. Syst.* p. 3288. 98.—*Turt. Lin.* iv. p. 236. AUREA.
Lister Conch. t. 404. f. 249.—*Petiv. Gaz.* 94. S?
Chem. Conch. vii. t. 43. f. 453.

Venus nebulosa. *Pult. Cat. Dorset.* p. 34.

Venus rhomboides. *Br. Zool.* No. 55?—*Turt. Lin.* iv. p. 241?

V. with a sub-cordated, moderately strong shell, rounded at both ends like the last, but not so broad in proportion to its length; striated transversely, and marked with very faint longitudinal striæ, scarcely discernable without a glass: *umbo* placed near to one end, small, pointed, turned to one side; beneath which is a lanceolate, cordiform depression: colour various, sometimes white, elegantly

S

marked

marked with brown, or blueish-black, zigzag lines; or mottled with cinereous; others are plain brown, frequently of a yellowish tinge, and sometimes deep ferruginous about the *umbo*: in most there are a few streaks at the anterior margin. It varies also in shape; some are nearly as long as they are broad; others extend at the anterior end, and become more pointed, but in all the front margin is considerably more rounded than in the *Virginica*. Inside yellowish-white; margin plain; valves concave: hinge furnished with three teeth in each valve, the middle one a little bifid. Length commonly about one inch; breadth an inch and three-eighths.

This species has sometimes been confounded with the *Virginica*, but may be readily known, not only by its inferior size, different colour and markings, but by its being more convex, the striae much finer, and the front margin more rounded; besides which it is always longer in proportion to the breadth.

LISTER has given a very good figure of this shell, and has marked it as an *English* species. It was known also to DOCTOR SOLANDER, and was called in the *Museum Portlandicum* by the name of *nebulosa*, which name was retained by DOCTOR PULTENEY in his catalogue of *Dorsetshire* shells, who says it is found on that coast; indeed we observed it on *Studland* beach.

It is very common amongst the sand taken from *Fal-*
mouth

mouth harbour, where we never observed the *Venus Virginea*: it is also not unfrequent on the south coast of *Devon*. A variety of this shell is probably the *V. Rhomboides* of the *British Zoology*.



Pestunculus truncatus. *Da Costa* p. 195 ?

20.

SULCATA.

V. with a strong, thick, sub-orbicular, sub-angulated, flattish shell, with concentric ridges; the furrows or *fulci* broader than the elevated parts, and both become nearly obsolete at the sides and towards the beak, where it is only wrinkled: the colour is white, but when alive is covered with a very thick, dusky-brown *epidermis*, so very opaque that the colour of the shell is not to be seen: *umbo* very prominent and large, turning a little to one side; beneath which is a lanceolate, cordiform depression; the cartilage slope is also depressed, and is much more strait than on the opposite side; the exterior margin is rounded. The inside is white, smooth, and glossy at the margin; the middle dull, yellowish, and appears rough when examined with a glass; the edge crenated: hinge remarkably strong: teeth large and prominent; in one valve three teeth, the middle one much larger than the others, with a deep cavity on each side, into which the two teeth of the other valve lock: it has no *cicatrix*, but on each side is a lunated depression, marked with four or five semi-circular ridges, to which the ligaments of the animal are fixed for the purpose of closing the shell. Length seven-eighths of an inch; breadth nearly the same.

S 2

We

We received this species from Mr. SOWERBY, who informed us it was *English*; and we observed the same shell in the cabinet of *British testacea* belonging to Mr. SWAINSON, who said he received it from the *Dutchess of Portland* as such, and that it has been since found in the north of *Scotland*, where it is known by the trivial name of the *brown circular-furrowed northern cockle*.

It was marked in Doctor PULTENEY'S cabinet *Venus fulcata*, but he did not know it had ever been found in this country, nor did he believe it had ever been described, and therefore named it himself.

We have suspected this may be the *Pectunculus truncatus* of DA COSTA, though certainly not the *Tellina Cornubiensis* of PENNANT, which he erroneously quotes. We shall here subjoin the description given by DA COSTA in order that our conchological readers may judge for themselves.

“A small species, very thick and strong, of a somewhat triangular shape; the valves pretty concave; the sides very dissimilar, one being rounded, the other near perpendicular, flattish, or truncated.”

“Outside whitish, except towards the upper part, or round the beak, which is of a light purple colour.”

“It is wrought with concentric, transverse, broad, and very thick ridges, close-set, with large intermediate furrows

rows. On the turn or edge of the truncated side the ridges generally divide or fork, and on the truncated side they tend obliquely upwards from those of the body: this truncated part is rather in a slope than quite perpendicular. The beaks are strong, pointed, and turn sideways. The margins are plain."

"Inside white, smooth, and glossy. The margins delicately notched."

(And adds,) "I received this species from the coast of *Cornwall*."

GEN. XII.

CHAMA.

Animal a TETHYS.

SHELL; bivalve, strong.

Hinge rugged, gibbous; teeth obliquely inserted into the opposite valve.

1
COR.

Chama Cor. *Lin. Syst.* p. 1137.—*Gmel. Syst.* p. 3299. 1.
Chem. Conch. vii. t. 48. f. 483.
Lister Conch. t. 275. f. 111.—*Favon.* t. 53. G.
Gualt. t. 71. f. E.—*Turt. Lin.* iv. p. 244.

C. with a sub-globose, cordated, thick, strong shell; smooth, or slightly wrinkled transversely, covered with a yellowish-brown *epidermis*: *umbo* large, prominent, much contorted or incurvated, and turned to one side, not touching when the valves are closed: hinge strong; teeth flattish. Inside smooth, white; margin plain.

This shell received its name from its representing a heart when viewed sideways.

It

It is a curious species, and not noticed by any conchological writer as a *British* shell.

In the cabinet of Mr. SWAINSON are two, which were taken in the *British* seas; one nearly three inches in diameter from the coast of *Scotland*; the other, not above an inch and a half in diameter, was dredged up off the *North Foreland* by himself; and though destitute of the animal, was perfect, very recent, and in good preservation.

It is found about the *Hebrides*.

GEN. XIII.

ARCA.

Animal a TETHYS.

SHELL; bivalve, equivalve.

Hinge; with many teeth, alternately locking between each other.

1.
PILOSA.

- Arca pilosa. *Lin. Syst.* p. 1143. 182.
Gmel. Syst. p. 3314. 36.
Pult. Cat. Dorset. p. 35.
Turt. Lin. iv. p. 256.—*Gualt.* t. 73. A.
Chem. Conch. vii. t. 57. f. 565. 566.
Lister Conch. t. 247. f. 82.
- Arca Glycymeris. *Br. Zool.* t. 58. f. 58.
Don. Br. Shells. ii. t. 37.
Lin. Trans. vi. t. 18. f. 1. 2. (*Wood.*)
- Glycymeris orbicularis. *Da Costa* p. 168. t. 11. f. 2. 2.

A. with a strong, orbicular shell, covered with a dark brown, pilous *epidermis*, particularly about the margin; beneath this the older shells are sometimes of a rusty brown colour,

colour, others almost white, with zigzag, angular stripes of chestnut, or orange-yellow; in younger shells the markings are frequently of a carnation colour. It is faintly striated longitudinally, with transverse, antiquated wrinkles or ridges: *umbo* large, central, and not turned to either side. Inside white, with sometimes a little purplish-brown at one end; margin strongly crenated. Diameter two inches and a half, or more.

This species and the *Arca glycymeris* have been greatly confounded, and indeed it is not an easy matter to ascertain them by the synonyms of GMELIN.

LISTER has given a very good figure of this shell, and marks it as *English*, as well as from *Guernsey*; this however is quoted by GMELIN for his *Glycymeris*. We have had some doubt whether these two shells are actually distinct, and whether the variation may not be occasioned by climate. Doctor PULTENEY expressly says, they are totally different; we have therefore followed that able conchologist, in giving it as the *pilosa* of LINNÆUS.

This shell is in great abundance on the shore near *Pendennis Castle* in *Cornwall*, of a large size, but all worn and mutilated, as if driven from a considerable distance.

We have obtained it by dredging, on the south coast of *Devon*, but rarely alive, except small specimens: is also taken on the *Dorset* coast by dredging, at *Weymouth* and at *Swanage*; and we have received it from *Kent*.

2.

LACTEA.

- Arca lactea.* *Lin. Syst.* p. 1141. *Gmel. Syst.* p. 3309. 15.
Chem. Conch. vii. t. 55. f. 547.
Lister Conch. t. 235. f. 69.—*Petiv. Gaz.* t. 73. 1.
Da Costa p. 171. t. 11. f. 5. 5.
Turt. Lin. iv. p. 252.
- Arca barbata.* *Br. Zool.* No. 60. t. 58. f. 59. reference misplaced to *A. Nucleus.*
- Arca crinita.* *Pult. Cat. Dorset.* p. 34.

A. with a rhomboidal, yellowish-white shell, covered with a brown pilous *epidermis*, under which it is furnished with numerous fine, close-set, regular striae longitudinally, or from the *umbo* to the margin, with a few concentric wrinkles or ridges: the interstices between the striae are prettily punctured, giving the shell a reticulated appearance when examined by a lens: *umbo* not quite central; hinge furnished with numerous teeth. Inside white; margin plain.

This species is subject to great variety in shape, some are rounded at both ends, others angulated, or cut off at one end; and the striae, which are faint in some, are very strong in others, both transverse and longitudinal, crossing in a decussated manner; the transverse striae, however, are always least distinct.

DoctOR PULTENEY has considered this shell as distinct from the *A. lactea* of LINNÆUS, observing that, that is much larger, and is strongly striated in a reticulated manner. *English* specimens, however, are sometimes re-
 ticulated

ticulated very conspicuously; and, if we make allowance for the various effects of climate, it may be conjectured this is only a variety in a depauperated state.

This shell is found in great abundance on some parts of the south coast of *Devon*; and not unfrequent on that of *Cornwall*, particularly about *Falmouth*; but live shells, or double valves with the *epidermis* on, are rare. It seldom exceeds half an inch in length; and three-quarters in breadth.



Arca Noae.	<i>Lin. Syst.</i> p. 1140. 169.	3.
	<i>Gmel. Syst.</i> p. 3306. 2.	NOÆ.
	<i>Chem. Conch.</i> vii. t. 53. f. 531. a.	TAB. 4. f. 3. 3.
	<i>Turt. Lin.</i> iv. p. 250.— <i>Gualt.</i> t. 87. H.	
Musculus Matthioli.	<i>Lister Conch.</i> t. 363.. f. 208.	
Arca tortuosa.	<i>Br. Zool.</i> No. 57. figure omitted.	
	<i>Borlase Corn.</i> t. 28. f. 15. 16.	

A. with a rhomboidal shell, the smaller end of each valve turning inwards to meet each other, forming a sharp angle, giving that end a sub-cordated appearance: the *umbo* is placed nearest to one side: the *apex* prominent, and greatly separated by a deep *fulcus*, which is smooth and glossy: the *striæ* that run from hinge to margin are regular and strong; these are crossed with fine, transverse *striæ*, that make the shell elegantly reticulated: some are marked with concentric, antiquated ridges: colour rufous-brown, lightest at the larger end. Inside whitish or

tinged with brown: hinge flrait, furnished with numerous teeth.

We have found this singular species at *Milton* sands, on the south coast of *Devon*, but it is extremely rare. BORLASE first observed this to be an *English* shell, having found it at the lands-end in *Cornwall*, but speaks of it as rare. Those we found do not much exceed half an inch in breadth, which is about the size of the figure given by BORLASE.

Foreign specimens are much larger.



4.
MINUTA.

- Arca minuta.* *Gmel. Syst.* p. 3309. 14.—*Lin. Trans.* iii. p. 64?
Chem. Conch. x. t. 170. f. 1657, 1658.
Turt. Lin. iv. p. 252.
Arca Modiolus. *Walk. Min. Shells.* f. 81.
Adams Micros. t. 14. f. 43.
Arca caudata. *Don. Br. Shells* iii. t. 78.

A. with an oblong shell, the anterior side running into an angulated beak, cut off at the point; finely striated transversely, interrupted by three or four strong concentric ridges: colour white, or yellowish: *umbo* very small, turning a little towards the angulated side; beneath which is a smooth depression reaching to the end; this part is indented, which gives the produced side a reflexed appearance. Inside smooth, glossy; colour the same as the outside; teeth numerous, angulated, the angular sides placed towards

towards the *umbo*: immediately under the *apex* is a cavity, and a space destitute of teeth, dividing them into two series: margin plain. Length three-eighths of an inch; breadth scarce half an inch.

This curious and rare species we received from Mr. BOYS of *Sandwich*, for the shell figured by WALKER as above quoted, at which place it is not uncommon. Mr. WALKER considered this shell as the *A. Modiolus* of LINNÆUS. CHEMNITZ has given a tolerably good figure of this species, which GMELIN quotes as his *A. minuta*. Mr. ADAMS has given an *Arca minuta* in the *Linnean Transactions*, but from his short description, we cannot be confident it is the same. He says, "*Testa subrotunda: striis concentricis, margine integro. Color albus.*"



- 5.
- Arca Nucleus *Lin. Syst.* p. 1143.—*Gmel. Syst.* p. 3314. 38. NUCLEUS.
Chem. Conch. vii. t. 58. f. 574. a. b.
Br. Zool. No. 59. figure erroneous.
Don. Br. Shells ii. t. 63.—*Turt. Lin.* iv. p. 257.
Pult. Cat. Dorset. p. 35.—*Gualt.* 88. R.
Lin. Trans. vi. t. 18. f. 3. 6. (*Wood.*)
Pitt. Gaz. t. 17. f. 9.
 Glycymeris argentea. *Da Costa* p. 170. t. 15. f. 6. *dextra.*

A. with a sub-triangular, white shell, concentrically wrinkled, and crossed with numerous, minute, obsolete striae from hinge to margin; covered with a glossy, olivaceous

aceous *epidermis*: *umbo* placed a little to one side, beneath which is a cordiform depression. Inside glossy, silvery white; hinge angular, beset with numerous, fine, regular teeth in a pectinated form: margin finely crenulated. Length three-eighths of an inch; breadth somewhat more.

This species is common on most of our sandy shores. Mr. PENNANT has by mistake referred to his *Arca barbata* for the figure of this shell.

GEN. XIV.

PECTEN.

Animal a TETHYS.

SHELL, bivalve, inequevalve, most times ribbed or striated longitudinally.

Hinge, toothless, with a small sub-triangular cavity; aurated.

- 1.
- Ostrea maxima.* *Lin. Syst.* p. 1144.—*Gmel. Syst.* p. 3315. 1. MAXIMUS.
Pult. Cat. Dorset. p. 35.
Chem. Conch. vii. t. 60. f. 585.
Lister Conch. t. 163. f. 1.—*Ib. Ang.* t. 5. f. 29.
Don. Br. Shells ii. t. 49.—*Turt. Lin.* iv. p. 258.
Gualt. t. 98. A. B.—t. 99. A.
- Pecten maximus.* *Br. Zool* No. 61.
Pecten vulgaris. *Da Costa.* p. 140. t. 9. f. 3. 3.

P. with fourteen or fifteen rounded ribs, longitudinally grooved, and wrought with very fine, transverse striæ: upper valve flat, with a depression at the *umbo*; colour rufous; lower valve very convex, white, tinged with yellow;

yellow; auricles striated, equal, rectangular. Inside white, with rufous-brown round the margin. Length five inches; breadth six. It is sometimes found variegated with pink and brown.

This shell is not uncommon on some parts of our coast, and is frequently sold for the use of the table, being much esteemed. Is plentiful in *Salcomb* bay, in *Devonshire*, and in the sea between *Portland* and *Purbeck* in *Dorsetshire*.

We are informed by old and experienced dredgers, that the greatest quantity are taken after a fall of snow.



2.

JACOBÆUS.

- Ostrea* Jacobæa. *Lin. Syst.* p. 1144.—*Gmel. Syst.* p. 3316. 2.
Pult. Cat. Dorset. p. 36.
Turt. Lin. iv. p. 258.
Gualt. t. 99. B.—*Favan.* t. 54. L. 1.
- Pecten* Jacobi. *Chem. Conch.* vii. t. 60. f. 588. 589.
Lister Conch. t. 165. f. 2.—t. 166. f. 3.
- Pecten* Jacobæus. *Br. Zool.* t. 60. f. 62.
Da Costa. p. 143. No. 2.

P. with seventeen or eighteen, very convex, ribs; upper valve flat, rufous; the ribs rounded, finely striated transversely; with a smooth, whitish depression at the *umbo*: lower valve pure white; ribs angulated, or brought to a flat surface, strongly furrowed longitudinally, and marked with fine transverse striæ: auricles equal, rectangular, striated. Inside white, a little tinged with rufous

at

at the margin. Length four inches; breadth five; rarely found so large in the *British* seas.

This species very much resembles the *P. maximus*, but the fides rise higher towards the hinge; and it is at once distinguished by the under valve being pure white; and by the flat, angulated ribs.

It is a rare shell, but has sometimes been dredged up on our coast, particularly in *Dorsetshire*, at *Poole* and at *Weymouth*; as we are assured by DOCTOR PULTENEY.

DA COSTA informs us he received it from the same coast, as well as from *Cornwall*, and *Scarborough* in *Yorkshire*.



3.

Ostrea opercularis. *Lin. Syst.* p.1146.—*Gmel. Syst.* p.3325.51. OPERCULARIS.

Pult. Cat. Dorset. p. 36.

Turt. Lin. iv. p. 266.

Lister Conch. t. 190. f. 27.28.—*Id. Ang.* t.5.

f. 30.

Pecten opercularis. *Chem. Conch.* vii. t. 67. f. 646.

Favan. t. 54. L. 2. 4.

Ostrea subrufus. *Don. Br. Shells* i. t. 12.

Pecten subrufus. *Br. Zool.* t. 60. f. 63.

Pecten pictus. *Da Costa* p. 144. t. 9. f. 1. 2. 4. 5.

Lin. Trans. vi. t. 18. f. 7. 8. (*Wood.*)

P. with a sub-orbicular shell, with about twenty rounded ribs, finely striated transversely: colour various, most fre-

V

quently

quently white, beautifully variegated with red or purple; sometimes of one colour; white, yellow, brown, or purplish: the under valve most highly coloured; the upper valve is not so convex as the other: auricles nearly similar, striated. Inside white, in some parts a little tinged with brown. Diameter about two inches and a half.

This species is common on many parts of our coast: in *Devonshire* and *Cornwall* is frequently taken for culinary purposes; known by the name of *Frills* or *Queens*.



4.

VARIUS.

- Ostrea varia.* *Lin. Syst.* p. 1146.—*Gmel. Syst.* p. 3324. 48.
Pult. Cat. Dorset. p. 36.
Turt. Lin. iv. p. 265.
Don. Br. Shells i. t. 1. f. 1.—*Favan.* t. 54. B. 3. 4. 5.
Lister Conch. t. 178. f. 17. 18.
Gualt. t. 73. G.—t. 74. R.
Pecten varius. *Chem. Conch.* vii. t. 66. f. 633. 634.
Br. Zool. t. 61. f. 64.
Pecten Monotis. *Da Costa.* p. 151. t. 10. f. 1. 2. 4. 5. 7. 9.

P. with about twenty eight echinated ribs; colour various, sometimes like tortoise-shell, clouded dark chocolate-brown and yellow; others plain rufous-brown, or yellowish: upper valve less convex than the other; auricles very unequal, the longest ear on the superior valve is much wrinkled, the other striated lengthways: the whole shell is rough with concave spines, but least so towards the *umbo*; sometimes instead of spines it is imbricated on the ribs,

ribs, and only a little echinated about the sides. Immediately beneath the long ear of the superior valve, (which is not so broad as the corresponding one of the other valve) are a few teeth-like laminæ; at this part the shell is incapable of closing. Inside partakes of the colour of the exterior, but lighter. Length two inches and a quarter; breadth two inches.

This is a common species, frequently dredged up with oysters on various parts of the coast.



Pecten lineatus. *Da Costa.* p. 147. t. 10. f. 8.

Ostrea lineata. *Pult. Cat. Dorset.* p. 36.

Don. Br. Shells. iv. t. 116.

LINEATUS.

P. with a sub-orbicular shell, with eighteen narrow ribs; colour white, except the ridge of each rib, which is red on the upper valve: the lower valve is quite white; the interstices finely striated transversely; auricles nearly alike. Inside white. In shape this elegant species very much resembles the *P. opercularis*, one valve being a little more convex than the other; but the sides of this do not rise quite so high towards the ears, and the ribs are much finer; which, with the invariable red line upon the ridge of each, without any other markings, at once distinguishes it.

DOCTOR PULTENEY first noticed this shell on the *Dorsetshire* coast, and sent it to DA COSTA, who described it in his work. In the *Museum Portlandicum* was called by DOCTOR SOLANDER, *Pecten carinatus*.

We have found it in *Cornwall* and *Devonshire*, but is rather a scarce shell. Length rarely exceeds an inch and a half; breadth not quite so much.

6.
DISTORTUS.

- Pecten distortus. *Da Costa* p. 148. t. 10. f. 3. 6.
 Pecten Pufio. *Br. Zool.* No. 65.
 Lister Conch. t. 172. f. 9.—t. 189. f. 23.
 Id. Angl. p. 186. t. 5. f. 31.
 Chem. Conch. vii. t. 67. f. 635. 636.
 Ostrea Pufio. *Lin. Syst.* p. 1146?
 Gmel. Syst. p. 3324. 49.?
 Don. Br. Shells. i. t. 34.—*Turt. Lin.* iv. p. 266.
 Ostrea distorta. *Pult. Cat. Dorset.* p. 36.

P. with a very distorted shell, with numerous, rib-like striæ, some of which are larger than others: the upper valve is, in general, much more flat than the inferior, but it is of so distorted a growth, that no two are found alike. The under valve, by which it adheres to rocks and old shells, partakes of all the inequalities of the part to which it is affixed; and scarce any ribs or striæ are to be found on that valve, except towards the *umbo*. The superior valve partakes of these irregularities more or less, though it is always striated, but frequently interrupted by swellings and depressions; and the striæ become undulated. In the more perfect shells the auricles are large, sometimes nearly equal; in others scarce any ears are observed: colour most commonly rufous-brown, or red and white mottled. It rarely exceeds two inches in length; and one inch and a half in breadth.

This

This singular species is not uncommon in the west of *England*, from *Dorsetshire* to *Cornwall*, but the lower valves are seldom thrown upon the shores: these adhere so strongly to rocks, as not to be easily separated; and lie generally in deep water: perfect shells, however, are sometimes obtained by dredging, affixed to the inside of old oyster shells.

We have seen it perforated into those massy stones used for fixing the mooring chains to, in *Plymouth* harbour; or at least so enclosed, that it became necessary to break off part of the stone to get them out.



- Pecten obsoletus.* *Br. Zool.* t. 61. f. 66.
Don. Br. Shells. i. t. 1. f. 2.
Pecten parvus. *Da. Costa.* p. 153. No. 7.
Ostrea obsoleta. *Turt. Lin.* iv. p. 266.

OBSOLETUS.

P. with numerous, fine, longitudinal striæ, eight or ten more prominent than the others, at irregular distances; the valves are equal, and rather flat: the auricles are unequal; one very large, striated, the other extremely small: colour dark purple. Inside smooth, brownish.

This species, which was first given by Mr. PENNANT, appears to be very rare. DA COSTA received his from the coast of *Cornwall*.

Pecten

8.

GLABER.

Pecten glaber. *Br. Zool.* No. 63.

P. with a very thin shell; fifteen faint rays; equal ears.

The inner side of the shells marked with rays, divided by a single *fulcus*.

Anglesea. A scarce species. Small.

We have been obliged to copy Mr. PENNANT's description of this shell, not having been fortunate enough ever to meet with it. The description does not sufficiently correspond with the *Ostrea glabra* of LINNÆUS, to induce us to think it is the same species.



9.

LÆVIS.

TAB. 4. f. 4.

Pecten lævis. *Br. Zool.* No. 67*Ostrea lævis*. *Turt. Lin.* iv. p. 266.

P. with a flat, sub-orbicular, thin, pellucid shell, perfectly smooth, except a few faint concentric ridges: valves nearly equal; auricles strongly striated lengthways, crossed with very fine striæ; one ear much longer than the other: colour yellowish-white. Inside glossy white. Length five-eighths of an inch; breadth not quite so much.

Mr. PENNANT seems to be the only author who has given this species; found in *Anglesea*. We have found it at *Falmouth*; rarely: our finest specimen was dredged up alive, from *Salcomb* bay in *Devonshire*; this is of a pale, dull, orange-yellow.

GEN.

GEN. XV.

OSTREA.

Animal a TETHYS.

SHELL; bivalve, inequivalve, rugged or plated; no auricles.

Hinge toothless, with a transverse, striated cavity.

1.

- Ostrea edulis.* *Lin. Syst.* p. 1148.—*Gmel. Syst.* p. 3334. 105. EDULIS.
Chem. Conch. viii. t. 74. f. 682.
Gualt. t. 102. A. B.—*Br. Zool.* No. 69.
Lister Conch. t. 193. f. 30.—t. 194. f. 31.
Id. Angl. t. 4 f. 26.—*Pult. Cat. Dorset.* p. 36.
Turt. Lin. iv. p. 274.—*Favan.* t. 80. C.
Lin. Trans. vi. t. 18. f. 9. 10. (*Wood.*)
Ostreum vulgare *Da Costa.* p. 154. t. 11. f. 6.

O. with a sub-orbicular, rugged shell, with plates or folds lying over each other: generally of a brown colour.

This species, so well known, requires little description: it varies greatly in shape and size, according to the situation.

tion in which it is found: some have very strong, thick, ponderous shells; others are thin, with membranaceous plates or laminæ, obscurely and irregularly striated.

A pretty variety is found in *Salcomb* bay in *Devonshire*, with a very thin shell, with large membranaceous plates, wrinkled into irregular, interrupted ribs: the upper valve flat, or rather concave on the top, with a corneous margin, half an inch broad, extremely thin and brittle: the lower valve convex, clouded with pale purple, particularly round the margin. These are called *Rock oysters*, and vary so much from others, taken from a different part of the same bay, that they appear like a distinct species; and are very unlike those which are cultivated for the *London* markets; they are generally of an orbicular shape; with the *umbo* pointed, and central. Diameter about three inches and a half.

It is the nature of *oysters* in general to have the lower valve fixed to rocks, or loose stones, and frequently to each other; but this is not the case with the variety just described, in consequence their shape is more regular.

The appellation of *Rock oyster* seems to be given it by the fishermen, because they are taken on rocky ground.

For an account of the taking, breeding, and management of *oysters*, in order to supply the tables of the luxurious, we refer our readers to the *British Zoology*; DALE'S *History of Harwich*; and DA COSTA'S *British Conchology*; which

which is extracted from Bishop SPRAT's *History of the Royal Society*, p. 307.

- Ostrea striata.* *Pult. Cat. Dorset.* p. 36.
Don. Br. Shells. ii. t. 45.
Turt. Lin. iv. p. 275.
Ostreum striatum. *Da Costa.* p. 162. t. 11. f. 4. 4.
Lister Conch. t. 202. 203. f. 36. 37.
Ib. Angl. t. 4 f. 27.

2.
 STRIATA.

O. with a sub-orbicular shell, marked with fine, irregular, undulated, longitudinal, rib-like striæ; *umbo* very small, placed near the top, a little surrounded by the margin: superior valve less convex than the inferior: colour white. Inside smooth, glossy white, with a pearly hue; the hinge is a small cavity under the beak; a little below which is an opaque, chalky white spot, of an oval shape. Diameter rarely exceeds one inch and a half.

This species is subject to great variety in shape like the common oyster, and is frequently distorted and sinuous; but is never plated or laminated like that shell. Small specimens are often strongly ribbed with smaller intermediate striæ, and the margin angulated by the ribs; colour mottled, faint rufous-brown and white.

This shell, which was first noticed by Doctor LISTER, is not unfrequently found on some parts of our coast; but mostly single valves, and by far the greatest part that of the under or concave: these having lost the striæ by being much worn, are sometimes confounded for the *Anomia Ephippium*.


 GEN. XVI.

ANOMIA.



Animal not reducible to any hitherto found in a molluscous state.

It appears to be different in some species of *Anomia*, as may be seen by comparing that of the *Cepa* figured by MURRAY in his *Fundamenta Testaceologiæ*, t. 2. f. 23. and the *tridentata*, so called by FORSKAL, in his *Icones Animalium*, t. 6. 40.

The animal of the *A. patelliformis* seems to be different from either of these, by the description LINNÆUS has given of it.

SHELL, bivalve, inequivalve; one valve usually flat, the other convex: in several species the flat valve is perforated near the hinge, through which the animal is immovably fixed by a testaceous plug to some other body.

Hinge toothless: a transverse, linear prominence on the flat valve, connected under the beak of the opposite valve by a strong cartilage.

Anomia

- Anomia Ehippium*. *Lin. Syst.* p.1150.—*Gmel. Syst.* p.3340.3. *EPHIPPIUM*,
Chem. Conch. viii. t. 76. f. 692. 693.
Lijster Conch. t. 204. f. 38.
Br. Zool. t. 62.—*Gualt.* t. 97. B.
Don. Br. Shells i. t. 26.
Lin. Trans. vi. t. 18. f. 11. 12. (*Wood.*)
Turt. Lin. iv. p. 280.—*Favan.* t.41. B.
- Anomia Tunica Cepæ* *Da Costa* p. 165. t. 11. f. 3.
- Anomia Cepa*. *Lin. Syst.* p.1151?—*Gmel. Syst.* p. 3341?
Chem. Conch. viii. t. 76. f. 694. 695.
Pult. Cat. Dorset. p. 37.—*Id. rosea*

A. with a sub-orbicular, irregularly wrinkled, waved, and sinuous shell: one valve convex, the other flat, and perforated at the hinge, by which it adheres to other bodies, particularly oysters; taking the impression of whatever it is affixed to. We have seen very elegant, pellucid, compressed specimens, taken from the *Pecten maximus*, of a large size, with all the impressions of the ribs; sometimes longitudinal, in others transverse; and which is communicated to the upper valve. Inside pearlaceous, glossed with green, purple, violet, or yellow; with all the intermediate shades.

The *Anomia Cepa* of LINNÆUS is probably only a variety of this shell, strongly coloured in the inside.

It is very common on most of our shores, but rarely perfect, unless dredged up alive. Diameter sometimes three inches and a half; most frequently not above two inches.

The testaceous plug by which the animal fixes itself to other substances, is firmly attached by strong ligaments to the body; and so closely cemented, or united to whatever it is affixed, that they become inseparable; and of course when the shell is forced from its native place, the plug is left behind upon the stone or shell to which it adhered.



2.

SQUAMULA.

Anomia Squamula. *Lin. Syst.* p.1151.—*Gmel. Syst.* p.3341.6.
Chem. Conch. viii. t. 77. f. 696.
Br. Zool. No.71.—*Walk. Min. Shells* f.80.
Da Costa. p. 167.
Adams. Microsc. t. 14. f. 42.
Pult. Cat. Dorset. p. 37.
Turt. Lin. iv. p. 281.

A. with a sub-orbicular shell, not unlike the last, but considerably more thin and membranous; in general much compressed; the perforated valve quite flat, the other sometimes a little convex: colour dirty white when alive. Inside white, or tinged with green. This, like the preceding species, takes the impression of whatever it adheres to; and very pretty specimens are obtained from some of the *Pectens*.

Frequent on oysters, lobsters, crabs, and other marine bodies. Is distinguished from the young of the *A. Ehippium* by being smooth, and by the small pointed beak or *umbo*; is also much more flat. Diameter rarely exceeding half an inch.

Anomia

- Anomia aculeata.* *Gmel. Syst.* p. 3346. 30.
Chem. Conch. viii. t. 77. f. 702.
Turt. Lin. iv. p. 285.
Gualt. t. 97. B. lower figure.

3.
 ACULEATA.
 TAB. 4. F. 3.

A. with a thin, compressed, muricated shell, with interrupted, longitudinal striæ, furnished with small, concave, obtuse spines: beak small, turning a little downwards: under valve flat, generally plain, but sometimes a little echinated towards the margin; perforated near the hinge. Diameter three-eighths of an inch; most frequently not so large on our coasts.

We have found this species in *Devonshire* and *Cornwall*, adhering to the roots of *algæ*: most commonly of a dirty white or brownish colour.



- Anomia undulata.* *Gmel. Syst.* p. 3346. 31.
Turt. Lin. iv. p. 286.
Anomia undulatum striata. *Chem. Conch.* t. 77. f. 699.

4.
 UNDULATA.
 TAB. 4. F. 4.

A. with an extremely delicate, thin, pellucid, flat shell, of a sub-orbicular shape, with numerous undulated rib-like striæ, radiating from the *umbo*: beak small, pointed, placed a little within the margin; lower valve almost membranaceous, plain; perforation near the hinge, large, oval. Inside pearlaceous. Diameter about an inch.

This species, like others of the genus, is subject to vary in shape, depending intirely on the body to which it is af-
 fixed

fixed. It is sometimes found on the south coast of *Devon*; the finest specimens we have taken by dredging in *Salcomb* bay, adhering to the inside of old bivalve shells, especially the *Cardium lævigatum*.

These have the under valve convex, and the upper valve flat, or somewhat concave; but when the surface is flat to which they adhere, the lower one conforms to it, and the upper one becomes a little convex.

A variety is marked with rufous-brown between the ribs, towards the margin.

This shell differs from the *aculeata* in being larger, more pellucid, and in the ribs or striæ being more distant, undulated, and never furnished with spines.


 GEN. XVII.

MYTILUS.



Animal allied to an ASCIDIA.

SHELL, bivalve; in some species affixed by a thick silky *byssus*.

Hinge without teeth, marked by a longitudinal furrow: in some species crenulated.



- | | | |
|-------------------|--|---------|
| Mytilus edulis. | <i>Lin. Syst.</i> p. 1157. | 1. |
| | <i>Gmel. Syst.</i> p. 3353. 11. | EDULIS. |
| | <i>Chem. Conch.</i> viii. t. 84. f. 750. 751. | |
| | <i>List. Conch.</i> t. 362. f. 200.— <i>Id. Ang.</i> t. 4. f. 23 | |
| | <i>Br. Zool.</i> No. 73.— <i>Turt. Lin.</i> iv. p. 291. | |
| | <i>Pult. Cat. Dorset.</i> p. 33. | |
| | <i>Lin. Trans.</i> vi. t. 18. f. 13. 14. (<i>Wood.</i>) | |
| | <i>Gualt.</i> t. 91. E. | |
| Mytilus vulgaris. | <i>Da Costa.</i> p. 216. t. 15. f. 5. | |

M. with an oblong shell, somewhat pointed at the beak; sides very much sloped; anterior side a little angulated; posterior rather indented: colour blackish-blue, covered with

with a brown *epidermis*; sometimes radiated with fine blue. Inside blue about the margin, whitish in the middle: beneath the beak are several teeth-like crenulations. Length three inches; breadth one and a half.

This is the most common of all *British* shells, found in vast beds fixed by the *byssus*.

2.

INCURVATUS.



Mytilus incurvatus. *Br. Zool.* t. 64. f. 74.

Lister Conch. t. 357. f. 195. 196.

Turt. Lin. iv. p. 292.

This shell is very like the last, but broader in proportion to its length: the posterior side much incurvated: crenulations under the beak the same.

Whether this is really a distinct species may be doubted. It is usually found fixed into some crevice of a rock singly, and not in beds like the *edulis*. Many appear distorted about the beak, as if the shell was prevented in its growth by accident; and we think the intermediate gradations, between this and the preceeding, bring them so near together, as scarce to allow a specific distinction. It is however of a very inferior size, seldom exceeding an inch and a half in length; and one inch broad.

3.

PELLUCIDUS.



Mytilus pellucidus. *Br. Zool.* t. 63. f. 75.—*Turt. Lin.* iv. p. 292.

Chem. Conch. viii. t. 84. f. 755.

M. with a thin, pellucid shell, of a whitish colour, or tinged

tinged with blue, more or less radiated with deep blue or purple, covered with a yellow *epidermis*. In shape it resembles the *edulis*, but not so much indented at the posterior side, and is much more smooth and glossy. Inside glossy, blueish-white, rayed with blue like the outside; crenulations beneath the beak small. Length about two inches; breadth one inch.

This species does not appear to be common.

Mr. PENNANT says, it is found in *Anglesea*, sometimes in *Oyster-beds*; sometimes in trowling over flutchy bottoms.

We have found it sufficiently plentiful on the shore near *Southampton*; but rarely elsewhere.



4.

Mytilus barbatus. *Lin. Syst.* p.1156.—*Gmel. Syst.* p.3353.10. BARBATUS.

Chem. Conch. viii. t. 84. f. 749.

Pult. Cat. Dorset. p. 38.

Don. Br. Shells. ii. t. 70.

Gualt. t. 91. H. middle figure.

Mytilus curtus. *Br. Zool.* t. 64. f. 76. A.

Turt. Lin. iv. p. 292.

M. with a thin, sub-pellucid, sub-ovate, oblong shell, covered with a ferruginous-yellow *epidermis*, beset with a thick beard about the front margin, and on the anterior side, mixed with sand, broken shells, and other extraneous matter: the posterior side, towards the beak, extends outwards a little, and rises above the *umbo*, which gives it

a sub-arcuated appearance. Inside white; margin under the beak quite smooth. Length rarely exceeds two inches; breadth one inch.

DA COSTA makes no mention of this species. Mr. PENNANT speaks of it from *Weymouth*, from whence we have been favoured with it by Mr. BRYER. Doctor PULTENEY also states it to be on the *Dorsetshire* coast; and expresses some doubt whether it is not the young of the *M. Modiolus*.

With respect to the shape of these two shells, they certainly are extremely similar, but in colour they are essentially different; besides, the *Modiolus* is never found bearded, is always of a dusky-black colour, and grows to a very superior size. On the other hand, it must be admitted that young shells sometimes differ materially in colour; and that, as we never have seen any other which could be considered as the young of that shell, doubts must be entertained.

We have found this species in *Cornwall* and in *Devonshire* rarely, and have received it from *Sandwich* in *Kent*; but it does not appear common any where.

A variety is faintly radiated.

The rough, or bearded, appearance of this shell is occasioned, in part, by the *epidermis* being broken and divided into fibres, which in a soft, and glutinous state, arrests such extraneous matter as comes in contact.

Mytilus .

- Mytilus Modiolus. *Lin. Syst.* p.1158.—*Gmel. Syst.* p.3354.14. MODIOLUS.
Chem. Conch. viii. t. 85. f. 757.
Lister Conch. t. 356. f. 195.—t. 359. f. 198.
Br. Zool. t. 66. f. 77.
Turt. Lin. iv. p. 293.
Da Costa p. 219. t. 15. f. 5.
Pult. Cat. Dorset. p. 38.
Don. Br. Shells. i. t. 23.

M. with an oblong, sub-oval, strong shell, covered with a thick, purplish-black *epidermis*; shape like the last, but more concentrically wrinkled.

It is a very convex shell; the *umbo* large and prominent: Inside smooth, pearly.

This is a large species, sometimes growing to the length of six inches, and near three inches in breadth; but more usually about four inches long, and two broad.

It is a *pelagic* shell, and rarely taken even by dredging, except in very deep water; but is sometimes caught by the hook in fishing for whiting, or other fish, near the ground.

DA COSTA says it is found at *Scarborough*, and on the coast of *Wales*, as well as in the *Orknies*, and other coasts of *Scotland*; and also in *Kent* and *Cornwall*.

We have found it rarely in *Devonshire*; and according to DOCTOR PULTENEY'S account, has been dredged up at
 Y 2 Weymouth.

Weymouth. This species is furnished with a large filky *byssus*, not unlike that of the *Pinna*, but of a coarser texture, by which it adheres firmly to the bottom; and when taken by dredging is usually torn from the animal. We have taken the Pea-crab, *Cancer Pisum*, and two minute crabs, *Cancer minutus*, from one of these muscles; the former of an unusual size.

6.

UMBILICATUS.

Mytilus umbilicatus *Br. Zool.* t. 65. f. 76.

Don. Br. Shells ii. t. 40.

Turt. Lin. iv. p. 292.

Mytilus curvirostratus. *Da Costa.* p. 220.

M. with a thick, strong, oblong, sub-oval shell, in shape much like the two preceding; but is at once distinguished by a deep depression, or *umbilicus*, under the beak, opposite the hinge, which is singularly intorted and wrinkled: colour dark brown, or blackish. Length rarely above four inches.

Mr. PENNANT, who first described this species; says it is sometimes dredged up off *Priestholme Island*, and that it sometimes grows to the length of five inches. And adds, that the pea-crab is found in this shell of a larger size than usual. It is a very rare shell, and seldom found but in the place before mentioned.

7.

RUGOSUS.

Mytilus rugosus. *Lin. Syst.* p. 1156.—*Gmel. Syst.* p. 3352. 7.

Br. Zool. t. 63. f. 72.—*Turt. Lin.* iv. p. 290.

Mytilus

- Mytilus rugosus*. *Da Costa*. p. 223.
Pult. Cat. Dorset. p. 37.
Lister Conch. t. 426. f. 267.
Id. Angl. t. 4. f. 21.

M. with an oblong, sub-oval shell, with rugged, concentric wrinkles: colour dirty-white, covered with a yellowish *epidermis*: side next to the hinge always rounded; the opposite sometimes truncated: *umbo* small, obtuse, placed near to one end. Inside white. It rarely exceeds an inch and a quarter in length; breadth about half its length: is however very subject to vary in shape; some are very little longer than they are broad, others exceed the breadth nearly three times, and so convex as to be almost cylindric. It most usually gapes at one end, and sometimes in the front, opposite the hinge.

This species is found on many of our coasts, burrowed in lime-stone, in great abundance: is not uncommon on some parts of the coast of *Devon*, in company with the *Donax Irus*, particularly about *Plymouth*, and at *Torbay*.



8.

M. with an oblong, irregular, rugose shell, wrinkled, and frequently much distorted: commonly so much the shape of the *Solen minutus*, as to be easily confounded for a worn shell of that species, having lost the spines; others resemble the *Mytilus rugosus*. The particular characters are, that the hinge is close to one end, which side is quite square as if cut off; the beak large, prominent, and projects

PRÆCISUS.

TAB. 4. F. 2.

jects further in one valve than the other; which valve is rather largest, and receives the other within its margin, particularly at the opposite end from the hinge. In some both ends are truncated: colour dirty white, frequently covered with a brown *epidermis*. Inside white, hinge rough, strong, inflected, forming a deep cavity underneath the margin. Length, from hinge to the opposite margin, a quarter of an inch, breadth half an inch, but usually much less; though we have one specimen full three-quarters of an inch wide.

This species is found on some parts of the *Cornish* coast, and we have seen it burrowed in lime-stone at *Plymouth*; but is most commonly met with at the roots of *Algæ*, not unfrequently on many parts of the coast of *South Devon*, as well as at *Ilfracomb* in the north of that county: and we have received it from *Wales*.

It is readily distinguished from the young of the *M. rugosus* by the larger end being truncated, and not rounded, and by the valves being unequal.

9.

CRISTA GALLI.


 Mytilus Crista Galli. *Lin. Syst.* p. 1155.
Gmel. Syst. p. 3350. 1.*Chem. Conch.* viii. t. 75. f. 683. 684.*Id.* t. 73. f. 675—*Gualt.* t. 104. f. E.*Turt. Lin.* iv. p. 289.

M. with a rude, rugged, compressed shell, varying so much in shape as not to form any fixed character: colour opaque

opaque, ferruginous, or dull purple. Margin scolloped, or cut into deep, irregular notches, on both valves, corresponding with each other, so as to be inserted, and shut close. Inside white, or tinged with ferruginous: beneath the hinge, in the superior valve, slightly crenulated. Diameter two inches and a half.

This species, though as yet not ascertained to breed in this climate, has been found alive adhering to the bottom of ships; and possibly may become naturalized, as well as the *Teredo navalis*, which was first introduced in the same manner, and now become formidable in some of our harbours.

Is common in *India*, and in the *Red Sea*.



10.

- Mytilus discors*. *Lin. Syst.* p. 1159.—*Gmel. Syst.* p. 3356. 21. DISCORS.
Chem. Conch. viii. t. 86. f. 764. 767.
Det. C. in. p. 221. t. 17. f. 1.
Walk. Min. Shells. f. 79.
Adams. Micr. t. 14. f. 41.
Pult. Cat. Dorset. p. 38.
Don. Br. Shells. i. t. 25.—*Turt. Lin.* iv. p. 294.

M. with a very convex, sub-cordated, pellucid shell; the posterior and anterior sides longitudinally ribbed or striated, broader and stronger on the former: the middle area is plain, or faintly wrinkled transversely: *umbo* large, prominent; *apex* turned much to one side, and placed

placed close to the larger end; the anterior side is somewhat pointed: colour white, mottled with pink, or pale red; but these colours are, in a recent state, obscured by an olive-green, glossy *epidermis*. Inside white, or tinged with pink; margin crenated on the part which is ribbed.

We have found this species sparingly on the coast of *Cornwall* and *Devonshire*: adhering very strongly to the lower part of the stalks of *Algæ*, and frequently so enveloped by the bark or film of the plant, as to appear like a knot or swelling; the smaller end of the shell, however, is generally uncovered, or it might pass unnoticed.

DOCTOR PULTENEY speaks of having found a cluster of these muscles, adhering to the *Ascidia Mentula* of GMELIN, at *Weymouth*, from which DA COSTA took his description. The Doctor afterwards saw them on *Oysters*, from *Poole* and *Swanage*.

We have received specimens from Mr BRYER of *Weymouth*, completely enveloped by the *epidermis*, or skin of the *Ascidia* before mentioned, except a small corrugated opening: two or three were so fixed to the same animal, adhering strongly by their *byssus*. This circumstance is not uncommon on the coast of *Devonshire*, where we have seen that animal studded with *M. discors*.

It differs only in size, and being of a lighter colour, from those first introduced into *England* by Captain COOK,
from

from the *South Seas*, which were an inch and a half in breadth; whereas the *British* specimens rarely exceed half an inch in breadth, and three-eighths of an inch in length.

This shell has frequently been confounded with the following species, from which it is perfectly distinct, as may be seen by the comparative description there given.



11.

M. with a sub-oval, compressed, pellucid, thin, brittle shell, covered with an olive-green *epidermis*: and, like the preceding species, is divided into three compartments, the posterior and anterior sides ribbed, or striated longitudinally; the middle area slightly wrinkled: *umbo* placed as the last, but very little prominent: both sides rounded, the anterior one largest. Inside white, with a faint pearly gloss. Inferior in size to the preceding.

The singular structure of this and the *M. discors*, so much resemble each other, at first sight, that the essential specific characters have been overlooked: and we once received a specimen of each from a friend, an able conchologist, for the same shell.

The principal distinctions are, that this is very little convex, whereas the other is nearly as thick as it is broad; this is rounded, and broadest at the anterior side; the other is smallest on that side, and runs out to an obtuse point:

Z

it

it has only eight, or nine, clearly defined ribs, on the side next to the beak; whereas the other has double that number; which character is invariable: and this is never otherwise than of an uniform colour, without spots or markings of any kind. No author seems to have distinguished this species, although so essentially different from the *M. discors*.

We found this shell alive on the shore between *Southampton* and the mouth of the *Itchin*, in vast abundance; and not uncommon at *Ilfracomb* in *Devonshire*, in the holes or crevices of the rocks, and among various marine plants, near high-water mark; have also received it from the south coast of *Wales*.

This is always found detached, and never buried in animal or vegetable substances, like the *discors*; though it frequently adheres slightly by its *byssus*.



12.

CYGNEUS.

Mytilus Cygneus. *Lin. Syst.* p. 1158.—*Gmel. Syst.* p. 3355.
Lister Conch. t. 156. f. 11.
Chem. Conch. viii. t. 86. f. 762.
Br. Zool. t. 67. f. 78.—*Da Costa* p. 214.
Pult. Cat. Dorset. p. 38.—*Gualt.* t. 7. F.
Don. Br. Shells. ii. t. 55.
Turt. Lin. iv. p. 293.
Muller p. 208. No. 394.
Schroet Flussconch. t. 3. f. 1.

M. with

M. with a thin, fragile, semi-pellucid, oval shell, wrinkled concentrically, and covered with an olivaceous-green *epidermis*: *umbo* very small, placed near to one end. Inside glossy pearly white. Length rather more than two inches and a half; breadth near six inches.

This is the largest of the *British* fresh-water shells. Inhabits dull, deep rivers; but rarely found so large as in ponds and stagnant waters.

It bears great affinity to the *M. Anatinus*, and has, by some, been considered as the same: the material distinction is, that this is vastly superior in size, more convex, broader in proportion to its length, and does not rise so high at the hinge; though both shells are compressed at that part.

It must however be allowed, that the specific characters of distinction are not strong: and much is to be depended on the circumstance, of their being frequently found in separate places: and that this is not near so common.



13.

- Mytilus Anatinus*. *Lin. Syst.* p. 1158.—*Gmel. Syst.* p. 3355. 16. ANATINUS.
Chem. Conch. viii. t. 86. f. 763.
Lifter Conch. t. 153. f. 8.—*Id. Angl.* t. 2. f. 29.
Schroet Flussconch. t. 1. f. 2. 3.
Muller verm. p. 207. No. 393.
Petiv. Gaz. t. 93. f. 8. 9.
Br. Zool. t. 68. f. 79.—*Turt. Lin.* iv. p. 293.
Da Costa p. 215. t. 15. f. 2.

Mytilus Anatinus. *Don. Br. Shells*. iv. t. 113.

Pult. Cat. Dorset. p. 38.

M. with a thin, semi pellucid, oval shell, very like the *M. Cygneus*, but usually of a greener colour, less convex, and the margin at the hinge more prominent, rising into a sort of angulated wing. Length two inches; breadth three and a half.

This species inhabits rivers, and other fresh-waters; is very plentiful, and frequently found where the *M. Cygneus* is not.



13.

AVONENSIS.

Musculus angustior, sub-fuscus, paulo crassior. *Lister Conch.*
t. 154. f. 9?

M. with a sub-oval shell, of an olivaceous-brown colour, with concentric wrinkles: size of the *M. Anatinus*, but broader in proportion to its length, and not so produced at the hinge; the posterior side generally more obtuse, and rounded; the front margin nearly straight, or frequently sub-arcuated, particularly towards the smaller end.

In these particulars it seems to differ essentially from either the *M. Cygneus* or *Anatinus*, and is much less like either, than those shells are to each other.

This shell we found in great abundance in the river *Avon*, about *Lackham*, in *Wiltshire*, where it is much more plentiful than the *Anatinus*.

Possibly

Possibly it has been confounded with that shell, but we never found it except at the place before mentioned. It is not in general so thin as the preceding species; in shape corresponds very well with LISTER's figure of the shell here quoted, but in general is more strait on the front margin, close to the posterior side, and frequently makes an angle at that part.



15.

Mytilus striatus umbonibus productis. *Walk. Min. Shells.* f. 75. STRIATUS.

The striated muscle with lengthened beaks.

The colour pellucid white. From *Reculver* and *Sandwich* not uncommon. Minute.

We are not quite certain, that this species described by Mr. WALKER has ever come under our inspection; but have sometimes met with a shell, not very unlike the figure given, except that it had not any conspicuous longitudinal striæ, and which we have considered as the fry of the *M. Modiolus*, or *M. curtus*.

We shall here take the liberty of remarking, that very great attention is requisite to discriminate some of the minute bivalve shells, and separate them from the bivalve *Monoculi*.

The great affinity that the coverings, or shells, of some of this class of insects, bear to the testacea tribe, has in all probability

probability caused many to have been considered as small species of *Mytilus*, or the fry of larger; for many such *Monoculi* are capable of shutting their valves intirely, and inclosing every part of the animal: in which state they always are when dead, so that it is no easy matter to discriminate.

Mr. WALKER is not the only one who has fallen into this error, in his figures 76, 77, and 78, all of which we have received from *Sandwich*, and have found them in other parts.

The first is found in fresh-water, and is not much unlike *Monoculus conchaceus*, GMELIN *Syst.* p. 3003, but is longer, in proportion to its breadth, than the figure given of that insect by DONOVAN, *British Insects*; i. t. 5.

The other two, given by Mr. WALKER, are marine *Monoculi*; both found on *Oysters*, and other rugged shells; and is not uncommon on the coast of *Devon*: especially No. 77, about the *byssus* of the *Pinna ingens*: both these appear to differ only in shape, and do not seem to have obtained a place amongst the *apterous* insects. When examined under a microscope, the shells are punctured all over.

To these supposed *Mytili* of Mr. WALKER, we may add the *Monoculus conchaceus*, which has been sent to us for such; and we could enumerate many others, which inhabit

inhabit both salt and fresh-water, that might readily be mistaken for minute shells: one of which is figured in Tab. 14. No. 8. of this work by mistake, not having an opportunity of examining the animal till after the plate was engraved.

This, and another species of *Monoculus* in every respect like it, but of a longer and more cylindric shape, is found on *Oysters* on the south coast of *Devonshire*; and on the *byssus* of the *Pinna ingens*; a general repository for *Monoculi* and very minute shells, especially *Nautili* and *Vermiculi*.

These two species of *Monoculus* are extremely smooth, and glossy, of a bluish-colour when alive, or fresh, and opaque yellowish-white when dead; and are distinguished from any other, by the remarkable *sinus* in front, near the end, through which is a groove or channel; but this perforation is only to be distinguished when the valves are laid open. Had GMELIN made any mention of this singular structure, we should have been inclined to think these were his *M. luteus* and *M. flavidus*.* but as we have not at present an opportunity of consulting the figures of those insects given in MULLER, must leave the matter to be decided by entomologists; craving pardon for this digression.

We cannot however quit the subject without remarking, that the surest distinction between the shells of the bivalve
Monoculi

* The *antennæ* indeed of the one figured in this work was not simple, but composed of several bristles.

Monoculi and the minute bivalve *testacea* is, that the latter always, more or less, possesses some concentric wrinkles or annulations of growth, as well as some appearance of *umbo* or beak: such therefore, which are destitute of these marks, may with confidence be referred to the former.

If any such doubtful objects are put into water, even after the animal has been long dead and dried; and when softened, the valves carefully opened with the point of a fine needle, and afterwards put into a drop of water under a microscope; the *antennæ* and legs will soon appear, if a *Monoculus*.



GEN. XVIII.

PINNA.



Animal an ASCIDIA?

SHELL, bivalve, fragile, gaping at one end; and furnished with a filky *byssus* or beard.

Hinge, without a tooth; valves connected on one side, nearly the whole length.

LINNÆUS, on the authority of HASSELQUIST, calls the animal of the *Pinna* a *Limax*, or *Slug*: in this he has most certainly been mistaken, as it has not the smallest affinity; but appears more allied to the animal of the *Mytilus*.

It seems to be intirely destitute of locomotion, remaining immovably fixed by its *byssus* to other bodies; and so firmly attached, that it cannot be disengaged at the will of the animal, as the fibres are agglutinated to the gravel, sand, roots of marine plants, broken shells, and other extraneous matter, within its reach.

A a

The

The *Pinna* has been long celebrated for giving protection to a small species of crab, and which was supposed to be of great use to the animal, by giving it notice either of approaching danger or of its prey.

These stories, however, as handed down to us from earlier times, are not wholly unfounded, but mixed with too much fable to be fully credited in these more enlightened days. The shell of the *Pinna*, as well as many others, becomes the habitation of some small species of crab, which seems to live in harmony with the animal inhabitant. It is however remarkable, that in not less than fifty of the *Pinna ingens* we opened, not a single crab was found; and yet in the only specimen of *Mytilus Modiolus*, taken in the same place, no less than three crabs were found alive within the shell.

The ancients equally celebrated this shell for its silky *byssus*, from which they made the most costly vestments: even modern travellers assure us, gloves and stockings are manufactured from the beard of this animal at *Palermo*, *Naples*, and *Taranto*.



1.
PECTINATA.

- Pinna pectinata.* *Lin. Syst.* p. 1160.—*Gmel. Syst.* p. 3363. 2.
Chem. Conch. viii. t. 87. f. 770.
Pult. Cat. Dorset. p. 39.—*Gualt.* 79. C?
Turt. Lin. iv. p. 301.
Pinna fragilis. *Br. Zool.* t. 69. f. 80?
Pinna muricata. *Da Costa.* p. 240. t. 16. f. 3.
Don. Br. Shells. i. t. 10.

P. with

P. with a pellucid, thin, brittle shell, of a light horn-colour, darker towards the beak, where it is faintly varied with purple and blueish-green; it is marked with about eleven longitudinal striæ, or rather ribs, the whole length from the *apex* to the opposite margin, furnished with concave spines, encreasing in size at the larger end; about one third of the shell, on the side opposite the hinge, is destitute of ribs; and is finely striated obliquely to the ribs, on which the spines are very small, and the concave sides turn outwards; the hinge side is nearly strait, turning a little towards the beak: the other side bends a little inward under the beak, and is somewhat convex in the middle. Breadth three inches at the gaping end, which is somewhat rounded; length six inches and a half, tapering to the *apex*; the hinge side rather the longest. Inside smooth, with a pearly hue: beneath the *apex* several transverse, cartilaginous laminæ.

A shell of the above size we received from a friend, who took it in trawling off the *Edystone* near *Plymouth*: It is sometimes taken by the fishermen about *Torbay* and on the *Dorsetshire* coast; and we have seen it from the coast of *Suffex*; but most times of a small size, not exceeding three or four inches in length.

DA COSTA was certainly mistaken, in making this the *P. muricata* of LINNÆUS; that has been found in *England* rarely, according to the Catalogue of *Dorset* shells by DOCTOR PULTENEY, and is perfectly distinct.

2.

INGENS.

Pinna ingens. *Br. Zool.* No.81.—*Lister Conch.* t.372. f. 213?

P. with a very rugged shell, with irregular, concentric wrinkles, -running lengthways from the beak at the open side, and turning to the hinge nearly at right angles; sometimes breaking into laminæ or plates: from the beak run a few interrupted striæ, which crossing the wrinkles, sometimes form on the broader part of the shell, a few distant concave spines: but these must be considered as varieties, for in general it is destitute of any inclination to be echinated. In the spined variety it is observable, that the striæ, or ribs from which the prickles arise, are never above seven or eight, remote from each other; these spines however, are only found on very young shells. With age it is subject to be much distorted, and is indented in various parts, as well as on the margin: but the most perfect, and regular grown shells, are nearly strait from the beak along the hinge, turning a little inwards at the *apex*: on the opposite side, under the beak, it is concave or indented; beneath which it swells out, and increases gradually to the larger end, and is always longer on that side than on the other: the larger end is a little rounded, but is more angular next the hinge. Large and old shells are of a dark, and rather opaque horn-colour: smaller ones paler and more diaphanous; all more or less of a changeable green, at the smaller end. Inside smooth, glossy, and of a pearly hue; laminated at the beak: valves connected the whole length.

This

This species is not uncommonly twelve inches long; and seven inches broad at the gaping end.

The principal distinction between the young and the *P. pectinata* consists, in this being more wrinkled, broader in proportion to its length, shortest on that side where the hinge is placed; and in such possessed of spines, these as well as the ribs, are less numerous, and more distant.

MR. PENNANT seems to be the only one who has made mention of this shell, and that under the denomination of *Pinna ingens*. He says, "I saw specimens of some vast *Pinnae*, found amongst the farther *Hebrides*, in the collection of Doctor WALKER, at *Moffat*. They were very "rugged on the outside, but I cannot recollect whether "they were of the kind found in the *Mediterranean* or "*West Indies*."

LISTER's shell, here quoted, is much like this in shape; but that seems to be furnished all over with small spines, or scales, which renders it doubtful.

We discovered a bed of these shells in *Salcomb* bay, in *Devonshire*; where they are called by the fishermen *French Muscles* or *Scallops*.

They lie on a gravelly bottom covered with mud, and long sea-weeds; and are only to be got, at particular times, when the sea recedes farther than usual.

They

They stand upright, with the large end about an inch above the surface; the lower end fixed by a very large, strong *byssus*, so firmly attached to the gravel, that much force is required to draw them up; and most commonly the *byssus* is left behind. This beard is composed of numerous, fine, silk-like fibres, of a dark purplish-brown, two or three inches in length. The larger end of the shell is naturally a little open, and cannot be closed by art, but the animal is capable of effecting it: the beaks of the valves rarely cover each other exactly.

Some of these shells have been taken annually for many years, the animal having been accounted very good food; but they require at least five or six hours stewing, to render them eatable: if this is properly attended to, they are nearly as good as *Scallops*, but never so tender.

The bank, on which these shells are found, probably increases, so that the water leaves a greater part bare, at every spring tide, than formerly; and in consequence they become an easy prey to *Crows* and *Gulls*: few are now to be obtained, but at some unusual low tide.

We have taken them of all sizes, from one inch to one foot in length, and from their general habit cannot liken them to any of the *Linnæan* species. One of the largest, after the animal was taken out, weighed seventeen ounces. The animal is very disproportionate to the shell, not occupying one half of it.

That

That this shell has been found on other parts of the *British* coast, of a small size, is undoubted; for we have seen it in more cabinets than one, confounded with the *P. pectinata*: and we are partly inclined to believe the figure of the *P. fragilis* in the *British Zoology*, was taken from a small shell of this species; by its superior breadth, and being destitute of spines.



Pinna muricata. <i>Lin. Syst.</i> p. 1160.— <i>Gmel. Syst.</i> p. 3364. 4.	3.
<i>Chem. Conch.</i> viii. t. 87. f. 769.	MURICATA.
<i>Gualt.</i> 79. B?— <i>Pult. Cat. Dorset.</i> p. 39.	TAB. 5. f. 3.
<i>Turt. Lin.</i> iv. p. 301.	

P. with a thin, brittle, semi-pellucid, flesh-coloured shell, darkest at the smaller end: with ten or twelve broad ribs running longitudinally the whole length, and a few intermediate small ones at the narrow end; beset sparingly with concave prickles towards the larger end, generally at the extremity: the hinge side is quite strait; opposite side a little inflexed, and not so long: rounded at the gaping end.

DoctOR PULTENEY, who favoured us with a specimen of this species, from the coast of *Dorsetshire*, for the *P. muricata* of LINNÆUS, says, it has been dredged up at *Weymouth*; and that it is five or six inches long, by two or three wide. Our specimen was only four inches long. Young shells are nearly smooth, and destitute of spines.

This

This shell differs from the *P. pectinata* in colour, and in the ribs being much larger, firmer, more distant, and covering the whole shell. Whether it is really the *muricata* may perhaps be doubted, but we have been induced to follow so experienced and able a conchologist, notwithstanding the synonyms of GMELIN and CHEMNITZ do not accord with ours. In the latter author is a very good figure of our shell, differing very little from that we were favoured with by the Doctor, except in being rather more spinous.

DIV. III.

UNIVALVE SHELLS.

GEN. XIX.

NAUTILUS.
*Animal much in obscurity.**Rumpf. Mus. t. 17. f. B.*

SHELL, univalve, composed of concamerations, or cells, communicating with each other by a small aperture, or tube.

We shall in this place remark, that all the species of this genus, hereafter described, are minutely small, the *lacustris* excepted; the extreme beauty, or singularity of which, is only to be seen under a microscope.

The animal inhabitant, is at present so little known, that it has not obtained a place in the *System of Nature*, and in all probability, is very various.

To our worthy friend Mr. BOYS, of *Sandwich*, we are greatly indebted for the knowledge of many of this curious genus: by whose assistance we have been able to identify most of those given by WALKER, in his *Testacea minuta rariora*.



1.

BECCARII.

Nautilus Beccarii. *Lin. Syst.* p.1162.—*Gmel. Syst.* p.3370.4.
Turt. Lin. iv. p. 306.—*Planch.* t. 1. f. 1.
Walk. Min. Shells. f.63.—*Favan.* t.69. D.1.
Martini Conch. i. t. 19. f.178. 179.—t.20.
 f. 175. to 177.—*Gualt.* t. 19. f. H.H.I.
Adams Microsc. p. 640. t. 14. f. 29.

N. with four, or five volutions; with deep fulcated joints; ten in the first spire; upper part convex: beneath flat, and the markings less distinct: mouth turned downwards, not clasping the body whirl: aperture a small perforation in a convex front: in this part, however, it appears to be subject to variation; for in some we have examined, the front, or part in which the syphon is placed, has been depressed or concave.

The colour is frequently pellucid white, but more commonly covered with a brown *epidermis*; this, however, depends on the situation in which they are found: when the animal is alive, the pellucid specimens appear of a crimson colour.

Found frequent on the *Fucus vesiculosus*, and on the roots of other *Algæ*, as well as on *Oysters* and other shells:
 and

and seems to be a pretty universal, littoral shell, being found in numbers at *Rimino*, and in the sand of the *South Seas*.



Nautilus Beccarii perverfus. *Walk. Min. Shells.* f. 64.
Favan. t. 7. B. 2.

2.
BECCARII PER-
VERSUS.

N. with the spires reversed; in every other respect like the preceding species, with which it is frequently found, and is equally plentiful on our coasts.

FAVANNE evidently means this shell, (though he quotes the *Beccarii* of LINNÆUS,) as he particularly remarks its volutions turn from right to left.



Nautilus crispus. *Lin. Syst.* p. 1162.—*Gmel. Syst.* p. 3370. 3. CRISPUS.
Turt. Lin. iv. p. 306.—*Gualt.* t. 19. f. A. D.
Walk. Min. Shells. f. 65.—*Planch.* t. 1. f. 2.
Martini Conch. t. 20. f. 172. f. 174.
Favan. t. 69. D. 2.—*Id.* t. 7. B. 1.
Adams. Microsc. p. 640. t. 14. f. 30.

3.

N. with lateral spires, with about twenty flexuous, crenated joints in the exterior whirl, marked by elevated friae; outer edge carinated; interior volutions occult: aperture clasping the body, semi-cordate, furnished with a small perforation, or syphon.

Bb 2

This

This is a most elegant species, when examined under a microscope; both sides are uniform; the aperture equal, and perfectly lateral.

It is not uncommon, with the two last, at *Sandwich*, and *Sheppey* island: we have found it also at *Teignmouth* and *Salcomb*, in *Devonshire*, particularly on *Oysters*, and with the two preceding species, lodged in the *byssus* of the *Pinna ingens*. Are equally abundant on the shores of *Weymouth* and *Swanage*, in *Dorsetshire*, and on other parts of that coast: have received it also from the south coast of *Wales*.



4.

LÆVIGATULUS.

Nautilus spiralis geniculis lævibus. *Walk. Min. Shells.* f. 67.

Nautilus lævigatulus. *Turt. Lin.* iv. p. 306.—*Gualt.* t. 19.B?

Adams Microsc. p. 641. t. 14. f. 32.

Martini Conch. i. t. 19. f. 168?

N. spiralis, with smooth joints; colour semi-pellucid, white, and glossy.

To this very concise description Mr. WALKER adds, that it is found at *Sandwich* and *Seafalter*, but not common.

We must confess this shell appears to be in great obscurity, at least nothing like the figure, or description, has come under our examination. In a drawing we received from Mr. BOYS, with a reference to this shell of WALKER, and

and to a specimen sent at the same time, (which we consider as the *N. Calcar*,) there was nothing in appearance like the figure of the *N. lævigatulus*, which is neither described or figured as carinated.



- 5.
- Nautilus Calcar *Lin. Syst.* p. 1162.—*Gmel. Syst.* p. 3370. 2. CALCAR.
Turt. Lin. iv. p. 306. Tab. 15. f. 4.
Martini Conch. t. 20. f. 180. 181 ?
Walk. Min. Shells. f. 66 ?
Adams Microsc. p. 641. t. 14. f. 31 ?

N. with a smooth; spiral shell; with six joints on the body whirl; marked by as many flexuous elevated striæ, radiating from the centre, but not quite extending to the margin: back strongly carinated: both sides equally convex, smooth, and rather more elevated in the middle: interior volutions lost after entering the aperture, which is semi-cordate, clasping the body equally on both sides, and furnished with a small perforation.

It is perhaps very difficult to determine which of the various species, given by different authors for the *N. Calcar* of LINNÆUS, is the real shell: GMELIN quotes two figures in MARTINI, that appear perfectly distinct, vol. i. tab. 19. fig. 168. 169. the first of which is smooth on the back; the other is not only strongly carinated, but furnished with spines on that part. The same figures also occur in GUALTIERI, t. 19. B. C. and are equally referred to by GMELIN: that we have quoted in MARTINI for our shell, is indeed with doubt, for in all we have examined, the

Carina

Carina was regular, smooth, and even; not undulated as there represented, nor is the centre furnished with such elevated knobs.

The figure given by WALKER for the *N. Calcar*, appears to be our shell in a mutilated state; that part of the body whorl which enters the mouth, having been broken, gives the aperture a very extended appearance. Such an appearance accident has thrown in our way, and therefore we are inclined to think, that the figure above quoted in WALKER, was taken from an imperfect specimen of our shell. Much allowance indeed must be made, for the figures of such minute objects, highly magnified under a microscope; the eye which examines, and the pencil which delineates them, will occasionally vary: indeed, we perceive so considerable a difference between the original drawings of this, and other shells of Mr. WALKER, and the engravings taken from them, that we should scarce have known them to be the same; had they not been marked with the same numbers.

6.

DEPRESSULUS.

Nautilus: spiralis, utrinque subumbilicatus, geniculis depressis plurimis. *Walk. Min. Shells.* f. 68.

Nautilus depressulus. *Turt. Lin.* iv. p. 306.

Adams Microsc. p. 641. t. 14. f. 33.

N. with a spiral, sub-umbilicated shell, with many depressed joints; colour opaque white.

From *Reculver*: very rare.

Nautilus

Nautilus: spiralis, umbilicatus, geniculis fulcatis. *Walk.* UMBILICATULUS
Min. Shells. f. 69.

Nautilus umbilicatus. *Turt. Lin.* iv. p. 306.
Adams Microsc. p. 641. t. 14. f. 34.

N. with a spiral, umbilicated shell, with furrowed joints: colour opaque white.

From *Sandwich*: not common.



Nautilus: crassus, utrinque umbilicatus, geniculis lineatis. CRASSULUS.
Walk. Min. Shells. f. 70.

Nautilus crassulus. *Turt. Lin.* iv. p. 306.
Adams. Microsc. p. 641. t. 14. f. 35.
Martini. Conch. i. t. 19. f. 171?

N. with a thick, spiral, doubly umbilicated shell, with fine joints; colour opaque white.

From *Reculver*: exceeding rare.

This, and the two preceding species, never having come under our examination, we have been obliged to borrow their description from Mr. WALKER.



Nautilus lacustris. *Phil. Transf.* LXXVI. t. 1. (*Lightfoot.*) LACUSTRIS.
Helix lineata. *Walk. Min. Shells.* f. 28. Tab. 6. f. 3.
Helix nitida. *Gmel. Syst.* p. 3624?—*Turt. Lin.* iv. p. 511.
Schroet Flussconch. t. 5. f. 27?

N. with

N. with a compressed, sub-carinated, spiral, smooth, glossy, pellucid, horn-coloured shell; sometimes rufous-brown: the upper side convex; *apex* depressed, concave, with three visible volutions, and a fourth lost in the depression; these are bordered on their outer edge with an opaque, whitish line, or band, that runs spirally to the centre at the junction of the whirls: under side flat, and deeply umbilicated: concamerations distant; joints or divisions, only three visible in the exterior volution; these are nearly equidistant, and appear like so many curved, white lines, radiating from the *Umbilicus*, and are the shades of the *septa*, or plates that divide the chambers.

The first of these divisions is placed a considerable way within the aperture, the third at about two-thirds the circumference: between the first two divisions is sometimes a strong wrinkle, of a deeper colour than the rest of the shell: aperture narrow, sub-cordate, clasping the body whirl on both sides nearly equal; but the edge, or margin, slopes obliquely to the flat or under side. Diameter two-tenths, rarely a quarter, of an inch.

Mr. WALKER was the first who noticed this shell, but had overlooked the very singular structure of its internal parts; and indeed we might have supposed he had intended the *Helix fontana*, but that he expressly says, "The lined snail, with two central, white lines, crossing the *Umbilicus*. These are the two most conspicuous divisions; and, frequently has no other perceptible ones.

Mr. LIGHT-

Mr. LIGHTFOOT has well described, and given good figures of both these shells, in the *Philosophical Transactions* of 1786, in which he says, this has three or four white lines, which appear like rays from the central *Umbilicus*, to different and nearly equidistant, parts of the circumference.

We have not, however, yet met with a specimen, that had more than three divisions in the body volution, and sometimes one in the second whirl, not very distant from the line of the mouth: possibly these may encrease with age.

The *septa* or partitions of the cells do not exactly accord with Mr. LIGHTFOOT'S description: the aperture, or opening, in these partitions, is indeed triradiated, but the *septa* are not formed of one piece, but of three sub-triangular plates, each perfectly distinct, and unattached to each other. Two of these are placed laterally, even with each other, on the sides; the third is an elevated ridge on the interior volution, standing before the other plates, and not in a line with them; but, projecting inwards, gives the opening the appearance described in a front view.

This formation of the *septa* is indeed expressed, by the sections of the shell that gentleman has given.

This very singular and curious shell, though different from any known species of *Nautilus* in the formation of the *septa*, (which are usually of one, compact plate, with

a tubular perforation) cannot, however, be placed in any other genus with so much propriety. Possibly many of the minute species of *Nautili*, would be found to be various in the structure of the *septa*, and some not possessed of tubular apertures, could we dissect them with perspicuity: so that the formation of the aperture in the *septa*, had better be considered (as Mr. LIGHTFOOT justly observes) a specific, rather than a generic, character.

This may, therefore, be accounted as the only species of fresh water *Nautilus* hitherto noticed.

The animal is an aquatic *Limax*, or *Slug*; it has two very long, slender, filiform *tentacula*: at the base of which are two eyes, placed on the head, not on their summits, and retractile, as in those of the land kind.

When the animal extends itself, the head, tail, and part of the body, are protruded through the triradiated aperture, each at a separate part; the head at that of the middle ray: after it is dead, it contracts within the two outer *septa*, but never as we could observe, beyond the third; which makes that division always obscure.

Mr. WALKER speaks of its being found on flags, in *Hernhill* brooks, in *Kent*: it is also met with about *Sandwich*, from which place we have received it from Mr. BOYS.

Mr. LIGHT-

Mr. LIGHTFOOT says, in deep ditches of clear water, adhering to the roots of *Carices*; and that it was collected near *Upton* church, not far from *Eton*, in *Buckinghamshire*.

It is also found in the neighbourhood of *London*, as we have been informed by Mr. SWAINSON, who favoured us with many specimens taken on water plants, in ditches in the marshes about *Rotherhithe*, where it is not unfrequent.

It appears Doctor SOLANDER was acquainted with this shell, as he returned it to Mr. BOYS by the name of *Nautilus Segmentinus*, previous to the publication of the *Minute Shells* by WALKER; and of course before it was described as a *Nautilus* by LIGHTFOOT.



10.

Nautilus oblongus carinatus apertura lineari ovali. Walk. CARINATULUS.

Min. Shells. f. 72.

Nautilus carinatus. Turt. *Lin.* iv. p. 307.

Adams Microsc. p. 642. t. 14. f. 37.

N. with an oblong, carinated shell, with a narrow, oval aperture: colour whitish, transparent like glass.

From *Seafalter* and *Sandwich*: very rare.

Such is Mr. WALKER's description; but he does not seem to have well expressed it by the figure, if we may judge from a very good drawing we have been favoured with from Mr. BOYS. In this the joints are seven, the extreme one, though globose, is not a quarter the breadth

of those near the aperture: the joints too, regularly decrease in size, from the mouth to the end: the back is arched, but does not appear carinated.

We should certainly have considered this a distinct species, had there not been a reference on the drawing, to WALKER'S figure; and as we have never had an opportunity of examining either of the shells, we dare not venture to give it a distinct place.

11.

SEMILITUUS.

- ◆—
- Nautilus femilituus. *Gmel. Syst.* p. 3372. 12.
Turt. Lin. iv. p. 308.
Walk. Min. Shells. f. 73.
Martini Conch. i. t. 20. f. 186. 137.
- Nautilus subarcuatulus. *Adams. Microsc.* p. 642. t. 14. f. 38.
Turt. Lin. iv. p. 307.

N. with an elongated, sub-arcuated shell, with elevated joints; *apex* incurvated: aperture with a small, produced *Syphon*: colour opaque brown.

From *Sandwich* and *Sheppey* island; rare.

Mr. WALKER'S figure does not express the produced *syphon*, and is much too large at that part; whereas, it tapers considerably from the middle towards the aperture, and the *syphon* is placed nearly in a line with the back, or outer margin.

We were obliged to Mr. BOYS for fine specimens of this shell, as well as a very correct drawing, referring to WALKER'S figure.

Nautilus

Nautilus rectus geniculis depressis. *Walk. Min. Shells.* f. 74. RECTUS.

Nautilus Legumen. *Gmel. Syst.* p. 3373?—*Gualt.* t. 19. P?

Turt. Lin. iv. p. 309?

Martini Conch. i. vig. 1. f. E. e?

N. with a strait, or very little arcuated shell, with smooth joints: smaller at the posterior extremity than at the mouth: aperture a small *Syphon*.

From *Sandwich*; very rare.

A specimen of this shell, favoured us by Mr. BOYS, was a small matter arcuated, of an opaque-brown colour: length about one tenth of an inch: the external part had scarce any appearance of its being concamerated, but one side being ground, eight or nine distinct chambers appeared. The shell is very thick and strong for its size: though Mr. WALKER says, pellucid white.

We have very little doubt this is the *N. Legumen* of GMELIN, although neither the specimen before us, nor the figure given by WALKER, has any appearance of being marginated.



Nautilus Radicula. *Lin. Syst.* p. 1164. — *Gmel. Syst.* p. 3373. 18. RADICULA.

Turt. Lin. iv. p. 309.

Martini Conch. i. vig. i. G. G. g.

Tab. 6. f. 4.

Tab. 11. f. 2.

N. with a sub-conic, elongated shell, with eight or nine sub-globose articulations: smooth, opaque-brown; aperture a small *Syphon*. From *Sandwich*; and varieties with from two to five joints.

This .

This species appears to be subject to very considerable variation, with respect to the shape of the extreme joint at each end, as well as in the number: in some the aperture is extended to a conic point; in others it is only a small, round opening on the extreme articulation, which is globose: the smaller end in some, is rounded; in others, conic, pointed.

14.

SUBARCUATUS.

Tab. 6. f. 5.

N. with a sub-cylindric, sub-arcuated shell, with three conspicuous, globose articulations at the larger end: the remaining joints scarcely defined: aperture a small, produced *syphon*: colour pellucid, glossy white, sometimes covered with a brown *epidermis*. Length one tenth of an inch.

Mr. BOYS favoured us with specimens of this shell from *Sandwich*, and with them a drawing of what we consider a variety, differing only in having ten distinct articulations; the extreme one at the smaller end longer than either of the others, except the anterior one, in which the aperture is placed.

15.

JUGOSUS.

Tab. 14. f. 4.

Nautilus obliquus. *Gmel. Syst.* p. 3372. 14?*Turt. Lin.* p. 308?—*Gualt.* t. 19. N?*Martini Conch.* i. vig. i. f. H. h?

N. with a sub-arcuated, sub-cylindric shell, a little tapering: with nine, ridged, sub-globose articulations: aperture extended to a small conic *syphon*: the extreme joint,
at

at the smaller end, longer than the others near it: colour opaque-brown. Length more than one eighth of an inch.

This shell, which we received from Mr. BOYS, differs from *N. subarcuatus* in being longitudinally striated, or ridged: in other respects the shape is similar to the variety described, of that species.

We are inclined to think this may be a variety of the *N. obliquus* of those authors quoted: the only difference appears to consist in that being truncated at the anterior end, and crenated round the margin, instead of being produced to a conic *syphon*. Such a variety would not be more extraordinary, if we consider the variation incident to the *N. Radicula*: and indeed, the figure of the *N. obliquus*, given by MARTINI, is exactly what our shell would be, if the conic part, of the anterior articulation, was cut off. It is, therefore, very probable the *N. obliquus*, as generally described, is nothing more than a variety, or more probably a mutilated specimen, of this shell.



16.

N. with a stait, sub-cylindric shell, a little tapering; COSTATUS, with twelve raised articulations, furnished with four equi- Tab. 14. f. 5. distant, strong, longitudinal ribs, running the whole length of the shell: aperture extended in a conic *syphon*. Length a quarter of an inch.

Mr. BOYS favoured us with an excellent drawing of this new, and curious shell, found on the coast of *Kent*: and with it, a variety with only six joints.

GEN.

 GEN. XX.

 CYPRÆA.

Animal a LIMAX.

SHELL, univalve; involuted, sub-ovate, obtuse, smooth.

Aperture, linear, extended the whole length of the shell, dentated on both sides.

 i.

PEDICULUS.

 Cypræa Pediculus. *Lin. Syst.* p. 1180?

Gmel. Syst. p. 3418. 93?

Don. Br. Shells. ii. t. 43.

Turt. Lin. iv. p. 345.

 Cypræa Pediculus; seu Monacha. *Da Costa.* p. 33. t. 2. f. 6.6.

Borlase Cornw. t. 28. f. 12.—*Gualt.* t. 15. R.

Pult. Cat. Dorset. p. 39?

C. with an oval, glossy shell, tumid or raised on the back, surrounded transversely with elevated striæ, which terminate within the lips, giving them a crenated appearance; the surrounding striæ in some places divided by intermediate shorter ones, or else bifurcated; colour pale purple, with generally, three dark spots on the ridge of the

the back, the middle one frequently very faintly marked; outer lip and under part white. Length five-eighths of an inch.

This species, which is not uncommon on many of our shores, has generally been considered as a variety of the *Pediculus* of LINNÆUS; a shell very common in the *West Indian* seas; but we cannot help expressing some doubts respecting this matter.

We believe this is never found to possess that fulcus along the back, so invariable in the foreign ones: the colour of that shell too is different, and the spots are generally six, three on each side the dorsal depression.

Those, who have described this fulcus as a character in the *British* specimens, have certainly confounded them with foreign shells; for in the thousands we have examined from various parts of our coast; no such circumstance has ever occurred. The finest coloured, and largest, of these shells, we ever saw, were dredged up alive in *Salcomb* bay; those frequently found dead on the shores have generally lost their purple colour, or only faintly tinged.



Cypræa arctica. *Pult. Cat. Dorset.* p. 39.

2.
ARCTICA..

Martini. Conch i. t. 29. f. 309.

List. Conch. t. 707. f. 57.—*Id. Angl.* t. 3. f. 17.

Borlase Cornw. t. 28. f. 13.—*Guillt.* t. 14. O.P.

Cypræa Pediculus. *Br. Zool.* t. 70. f. 82.

D d

C. with

C. with a very pale, purplish, flesh-coloured shell, much like the preceding, but smaller and destitute of spots.

Whether this is really a distinct species, or only the young, or variety of the other, is very difficult to determine: all we can say is, that it is more common on our shores, and is frequently found where the other is not; and in some places, where the other is dredged up alive, we have not been able to procure a single specimen of this. It must, however, be remarked, gradations are sometimes observed, that run so much into each other, as to create strong suspicion of this being the same species.

It was separated by Doctor SOLANDER, who gave it the name we have here prefixed to it, in the *Museum Portlandicum*.



3.

BULLATA.

Tab. 6. f. 1.

C. with a thin, pellucid, white shell, in shape much like the *C. Pediculus*; some are quite destitute of transverse striae; others are faintly striated half way from the back to the inner lip, the other half to the outer lip marked with extremely fine longitudinal striae: the margin of the outer lip is not thickened, the edge finely crenated: the inner lip, even of those which are quite smooth, is a little denticulated: the *apex* is somewhat produced and formed into two or three small convolutions: in some the convolutions are well defined by a separating line, in others they are nearly even.

Doctor

Doctor PULTNEY informed us he had long possessed this shell in his Cabinet, and had called it *Cypræa Bullata*; which name we have retained. Whether it may be specifically distinct from the *Pediculus* admits of some doubt, as in some instances the transverse striæ surround the shell, though almost obsolete: the external volutions and the transparency of the shell, certainly bespeak distinction: to which we must add, that it is nearly equal in size, and consequently cannot be a young unformed shell: besides, we never found it but in *Salcomb* bay, except a single instance at *Falmouth* in *Cornwall*.

We have taken more than a dozen alive, by dredging, of different sizes, from a quarter to half an inch in length.

In that part of those which are transversely striated is a little purple tinge.



C. with a conoid, convoluted shell, of a pale greenish colour, with the outer lip white: extreme volutions two, very small; aperture linear, terminated by a groove, or gutter; both lips denticulated, the inner one but faintly; *Columella* sub-plicated. It is a very strong thick shell, with a beautiful polish, and quite smooth; the outer lip much thickened, with sometimes along the under edge, and both angles of the aperture a slight tinge of pink. Length not quite half an inch.

4.

VOLUTA.

Tab. 6. f. 7. 7.

This elegant species has never before been given as an *English* shell; but we have seen it amongst a parcel of small shells from the *West Indies*: and DOCTOR PULTENEY informed us, it was in the *Portland Cabinet* by the name of *Voluta edentula*. It does not however appear to have so much the character of that genus as of this, but may be considered as a connecting link. How it came to obtain the trivial name of *edentula* is not easily determined, as it is denticulated on both sides of the aperture.

This shell is certainly very rare; the only place we have found it in, is *Salcomb bay*, where it is sometimes taken alive by the *Oyster* dredgers; but is never found on the contiguous shores.

The animal, when alive, extends a thin membrane from each side the aperture, and almost covers the shell; this is elegantly speckled with bright yellow: the more fleshy parts of the body, before and behind, are speckled with pink.

It is probable many of the *Cypræa* genus, have the property of extending these lateral membranes over their shell, the *C. Pediculus* has it to a great degree, and when in motion under water, has a very elegant appearance, from its diversity of colours: generally black, orange, and pink, disposed in minute spots.

GEN. XXI.

BULLA.

*The Animal was considered by LINNÆUS as
a LIMAX,*

But later observations have proved, that whatever the animal may be, it is not a *Limax* in several species of the *Linnæan Bullæ*. For an account of the animal of *Bulla lignaria*, we refer the curious to the second volume of the *Linnæan Transactions*, page 15.

SHELL, univalve, convoluted, smooth.

Aperture for the most part somewhat contracted, oblong, longitudinal, the base entire.

Columella, smooth, oblique.

- 1.
- Bulla lignaria*. *Lin. Syst.* p. 1184. — *Gmel. Syst.* p. 3425. 11. LIGNARIA.
Lister Conch. t. 714. f. 71. — *Br. Zool.* t. 70. f. 83.
Martini Conch. i. t. 21. f. 194. 195.
Borlase Corn. t. 28. f. 14. — *Lin. Transf.* ii. t. 2. f. 18.
Da Costa p. 26. t. 1. f. 9. — *Turt. Lin.* iv. p. 351.
Pult. Cut. Dorset. p. 40.
- B. with

B. with an oval, thin, brittle, sub-pellucid, yellowish-brown shell, with numerous transverse striæ, of a lighter colour; in some approaching nearly to white, giving it the appearance of a piece of veined wood.

It has no external volution, but at the top is depressed into a *sub-umbilicus*: aperture large, extending the whole length of the shell, but contracts somewhat at the upper part. Inside glossy white; *Columella* visible to the end.

This is the largest species of *Bulla* found in *England*: it sometimes grows to nearly two inches in length, but more commonly not exceeding one inch and a half.

We have obtained this shell in *Cornwall* and *Devonshire* rarely: and we are informed it is sometimes dredged up at *Weymouth*; but is by no means plentiful any where.

This is not the only species of *Bulla* whose inhabitant possesses a gizzard of a testaceous nature.



2.

AMPULLA.

Tab. 7. f. 1.

Bulla Ampulla. *Lin. Syst.* p. 1183.—*Gmel. Syst.* p. 3424. 10.

Martini Conch. i. t. 22. f. 202. 204.—*Id.* t. 21. f. 188. 189.

Br. Zool. No. 84.—*Turt. Lin.* iv. p. 350.

Gualt. t. 12. E. F.—*Favan.* t. 27. F. 6.

Petiv. Gaz. t. 50. f. 13. & t., 99. f. 14.

B. with an oblong oval, smooth, glossy shell, of an opaque whitish colour, mottled and veined with light chestnut:

chestnut: no external volution, but in its place an *Umbilicus*: aperture moderately wide: on the lower end of the pillar lip the shell is thickened, of an opaque white colour; but this duplicature does not spread up the body of the shell, as in the *B. lignaria*: *Columella* not visible to the end. We found two or three of this species in sand from *Falmouth* harbour, the largest not above three-eighths of an inch in length: foreign specimens grow to a much superior size. Possibly this is the same as described by Mr. PENNANT for a young shell of the *B. Ampulla*; who says it was found near *Weymouth*. DA COSTA has considered Mr. PENNANT'S shell as his *B. Navicula*, the *Hydatis* of LINNÆUS.



Bulla patula. *Br. Zool.* t. 70. f. 85. A.

Pult. Cat. Dorset. p. 40.

3.
PATULA.

B. with a smooth, glossy, white, pellucid, oblong, involuted shell, upper end extending beyond the body; base more extended; aperture large, terminating in a short canal or gutter at each end, most contracted at the top; *Columella* twisted, forming a *sub-umbilicus* or furrow on the pillar lip: outer lip plain, and very thin. Mr. PENNANT first described this species from the *Portland* Cabinet, taken at *Weymouth*. Doctor PULTENEY favoured us with a specimen from the same place, the length of which is an inch, breadth half an inch.

The animal belonging to this shell is said to possess a gizzard, similar to that of the *Lignaria*.

Bulla

4.

APERTA.

Bulla aperta. *Lin. Syst.* p. 1183.—*Gmel. Syst.* p. 3424. S.
Martini Conch. i. p. 266. vig. 13. f. 3.
Chem. Conch. x. t. 146. f. 1354. 1355.
Pult. Cat. Dorset, p. 40.
Turt. Lin. iv. p. 350.—*Gualt.* t. 13. E. E.
Don Br. Shells. iv. t. 120. f. 1. 1.

Bulla, the Bubble, *Da Costa*, p. 30. t. 2. f. 3.

B. with a sub-orbicular, thin, pellucid, brittle, white shell: no external convolution or *Umbilicus*: *Columella*, or rather inner lip, very small, slightly involuted, visible to the end: the aperture occupies nearly the whole of the shell: the outside is a little wrinkled, but glossy.

This species has generally been considered as rare on our shores: DA COSTA was the first who gave it as *English*, and says it is fished up at *Weymouth*; and no where else, to his knowledge, on the *British* coast.

That author, however, seems to have confounded the *B. aperta* with the *B. patula* of PENNANT, (which as yet we believe has only been found on the *Dorsetshire* coast,) as he has quoted that shell for this; whereas this species is not mentioned in the *British Zoology*; nor was that shell known to DA COSTA. GMELIN and CHEMNITZ have followed DA COSTA's error.

Its usual size does not much exceed half an inch in length; but on the north coast of *Devon*, about *Biddeford* bay (where it is extremely plentiful) it is no uncommon thing

thing to find them of an inch in length, and three-quarters of an inch broad.

We have also found it of an inferior size on the opposite shores in *Wales*, particularly about *Laugharne*: rarely in *Cornwall*, *South Devon*, and *Dorsetshire*, about *Weymouth*, and on *Studland* beach, between *Swanage* and *Poole*. It is not uncommon on some parts of the coast of *Kent*, at *Sandwich*, and *Whitstable* bay, from whence we have received it with the animal, but not large.

The inhabitants of many of the *Bullæ* are larger than their shells, so that they cannot wholly recede within them: in this and the two following species the animal has all the appearance of being truly molluscous, enclosing the shell so entirely, that no part of it is to be seen.

MARTINI has badly figured several views of the animal, separate and attached to the shell, in the table above quoted; with figures of the testaceous plates found within the body, which constitute the stomach or gizzard.

PLANCUS has also described the animal, and has given a figure of the shell. Appendix, Tab. xi. fig. F. G.

The animal is rather a shapeless mass, of a sub-oval form; pellucid white, with numerous minute, opaque specks: no visible eyes, or *tentacula*; the anterior end rounded, but capable of variation: a shield, with a mem-

E e

branaceous

branaceous margin in front, covers the anterior half, divided longitudinally by a pellucid streak: another sort of shield covers the hind part, and extends into a membranous margin, making four lobes; the body, on each side, runs into an angle, pointing backward, close to the posterior shield. Beneath, the animal is divided into two parts; that before is the *Sustentaculum*; behind which is the membrane that forms the lobated end; and which is capable of extending laterally, and becoming quite even; the lobes being only formed by folds; on the posterior shield above, are a few streaks of opaque white.

Length of the largest examined, an inch and a half; breadth one inch; length of the shell rather more than half an inch.

The gizzard, or stomach, is large in proportion, of a prismatic shape, composed of three testaceous plates, two of which are of an inequi-lateral, sub-triangular form, and exactly similar; the other is smaller, of an ovate-oblong, inclining to lozenge-shape, with the angles rounded; these are concave on the outside, and united together by strong cartilages.

The circumstance of some of the animal inhabitants of this class of shells being furnished with testaceous stomachs, has been noticed by others, and indeed seems to have inclined some persons to an opinion, that no shell can be a *Bulla*, but where its inhabitant is possessed of this testaceous organ of digestion.

We

We shall however take the liberty of remarking, that this system will not hold good with respect to Conchology, where the shells, and not the animals, have been classed: could we examine the animal inhabitant of every species of shell, we should find that, on the present arrangement, some in each genus would differ from the generic character. But as we never can possibly have an opportunity of examining more than a very small portion of shells with their living animals, such new systematists must again be reduced to classification by the shell, and not by the animal. That an attention to the animal inhabitants of shells is of essential service in the discrimination of species, cannot be denied; but must be wholly confined to specific, not generic distinctions.



B. with a sub-oval, extremely thin, pellucid, white shell, HALIOTOIDEA. with somewhat the habit of a *Haliotis*, but destitute of the Tab. 7. f. 6. small perforations that mark that genus: it is smooth and glossy, but not quite destitute of wrinkles: aperture oval, not quite extending to the *apex*, which is small, obtuse, and convoluted sideways, scarce making two volutions: the body of the shell is very small, and only turns a little inwards, spirally: interior part visible to the end. Length three-quarters of an inch; breadth half an inch.

This species differs from the *B. aperta* in the aperture not extending to the upper end, and in having a contorted *apex*.

We have taken this new and rare shell by dredging in *Salcomb* bay; and have found it of a very inferior size on other parts of the south coast of *Devonshire*, particularly at *Torcrofs*; and once on *Studland* beach, in *Dorsetshire*. It has also been found at *Weymouth*, by Mr. BRYER.

The animal, like that of the preceding species, so completely envelopes the shell, that not the least appearance of it is to be discovered, either in a dead or living state. It is of an oval shape, and of a reddish, or brown colour; sometimes nearly white: has much the appearance of a contracted, naked *Limax*, and indeed seems to be nearly allied to that class of animals.

The upper part of the body is very convex, covered with a thick, tough, ligamentous skin, that conceals the shell, and extends downwards on each side, where the edges are thin, and detached from the body: in the fore part of this margin is a *sinus*, through which the animal protrudes an appendage, or arm, somewhat flat, a quarter of an inch in length, the extremity of which is bifid; the lower division terminating in a thread-like process. The body of the animal beneath, or rather the *Sustentaculum*, is oblong and flat, with a deep depression between it and the marginal skin: the head is furnished with two small, white *tentacula*, at the base of which, are two small black eyes.

The shell may be felt under the skin on the back, but is difficult to be extracted without breaking, from the
extreme

extreme toughness of the part that covers it; the best method of effecting it, is to make a longitudinal incision on the back, with a pair of sharp pointed scissars.

The animal is possessed of considerable locomotive power; and when in motion, frequently contracts the margin or loose skin into wrinkles, or folds, exposing the sides of the body.

It is in size three times as large as its shell, and is incapable of much contraction, or expansion: at first sight might be mistaken for the animal of *B. aperta*, but on comparison, will be found essentially different externally, and more particularly in being destitute of the testaceous gizzard, so remarkable in that animal.

At the time the plate was engraved, we had not been fortunate enough to obtain a larger specimen of the shell than the figure represents; but have since found it of the size described.

In the singular circumstance of the shell being enclosed within the animal of some of this class, there is a considerable analogy between them and the *Laplyfia*. The *L. depilans* possesses a flexible, corneous substance, under the skin on the back, termed a shield; which differs only from these species of open *Bullæ* in not being of a testaceous substance: this is of an oval shape, pointed at one end, which turns inward, and a little to one side, in a sub-convoluted manner: it is marked with concentric wrinkles: colour purplish-brown.

This

This, therefore, seems to be the link between the true *mollusca* animals, and the *testacea*: and it is probable future researches may discover, that many which have hitherto been considered as belonging to the *mollusca* tribe, are really *testaceous*, upon dissection.



6.

PLUMULA.

Tab. 15. f. 9.

B. with an ovate-oblong, depressed, pellucid, thin shell, of a yellowish-white colour, tinged with brown at one end; the other end minutely convoluted on the back, or upper part, like the *Bulla Haliotoidea*, but much smaller; the convolution makes one turn: it is strongly wrinkled concentrically for so delicate a shell, and is possessed of two or three ray-like indentations, running from the margin towards the *apex*. The inside, as well as the outside, is somewhat glossy and wrinkled; the aperture extends the whole of the shell, like the *B. aperta*: the pillar lip is slightly turned inward, to form the small depressed volution; but the aid of a glass is requisite to discover the formation of this part. Length half an inch; breadth near a quarter.

This is another of those singular *mollusca* animals, with a concealed shell under the skin upon the back: its shape is sub-oval, but variable; the *Sustentaculum* is large, and ovate, but usually in folds at the edges: the front is generally roundish; the body is small, covered with a broad, thin, sub-orbicular, reticulated membrane, variable in shape, frequently turning back at the margin: the head, which is most times concealed under the membrane or shield, is furnished with two broad *tentacula*, which are sometimes

sometimes quite expanded, and conic; at other times rolled up, and look like cylindric tubes: at the base of these above, are two small black eyes: on the right side of the body is a protruded *foramen*; immediately behind which is a large plumose appendage; the shape is compressed, broad towards the base, and tapering to an obtuse point; *pinnatifid*, the *pinnæ* standing alternate; these are somewhat retractile, and changeable in form: beneath the *tentacula* is a broad, bifid membrane, usually projecting into an angle on each side, but very variable in shape. Diameter nearly double that of the shell: colour pale yellow above; beneath pellucid, yellowish-white. It does not possess a testaceous gizzard.

We discovered this new and singular species on the rocks at low-tide, at *Milton* sands, on the south coast of *Devon*.



Bulla punctata. *Lin. Trans.* v. p.2. t.1. f. 6. 7. 8? (*Adams*.) CATENA.

7

Tab. 7. f. 7.

B. with a pellucid, white, glossy shell, closely and finely striated transversely all over; which, under a strong magnifier, are seen to be interwoven or formed into links like a chain: *apex* obtuse, with a visible involution: aperture extremely large, occupying almost the whole of the shell, except a small part at the top; in figure very much resembling the *B. aperta*. A variety with a more transparent zone round it, taking in eight or ten of the *catenæ*, which are more strongly defined; the rest of the shell appears

pears as it were frosted, and not so glossy, possessing a *sub-umbilicus*, and the outer margin of the aperture close to the body is winged, or reflected a little, forming a depression or *fulcus* on that part.

This beautiful species is an elegant object for the microscope, rarely exceeding one-tenth of an inch in diameter.

We found several of these shells amongst the sand at *Bigberry* bay, on the south coast of *Devon*.

If this is the same as the *B. punctata* described by Mr. ADAMS, which we suspect, it is found also on the south sands at *Tenbigh*.

It is probable this, and all the open species of *Bullæ*, are inclosed under the skin on the back of some *mollusca* animal, like the *Bulla aperta* and *Haliotoidea*.



8.

EMARGINATA.

*Bulla testâ gibbâ aperturâ emarginatâ. Lin. Trans. v. t. 1.
f. 9. 10. 11. (Adams)*

Mr. ADAMS's observations on this shell run thus: .

Shell pellucid, smooth: lip sub-arcuated. *B. emarginata*, *punctata*, and *denticulata*, agree in their general habits; and *truncata* is most nearly allied to *cylindrica*.

Bulla

Bulla, testâ oblongâ subæquali obtusâ lævi, aperturâ ad api- DENTICULATA.
cem denticulâ acutissimâ. *Lin. Trans.* v. t. 1. f. 3. 4. 5. (*Adams*)

Mr. ADAMS's observations are, "Shell pellucid white.
and at the Wash not common."



Bulla Hydatis. *Lin. Syst.* p. 1183. — *Gmel. Syst.* p. 3424. 9. HYDATIS.
Chem. Conch. ix. t. 118. f. 1019.
Pult. Cat. Dorset. p. 40. — *Gualt.* t. 13. D. D.
Turt. Lin. iv. p. 350.

Bulla Navicula. *Da Costa.* p. 23. t. 1. f. 10.

B. with an oval, sub-pellucid, thin, fragile shell, of a greenish or yellowish horn-colour, sometimes covered with a thin, ferruginous *epidermis*: the body is tumid, no external volution, but in its place an *umbilicus*: aperture large at the base; contracting more at the top, and extending rather beyond it: outer lip very thin; inner, or pillar lip a little thickened, and whitish. Young shells are sometimes very glossy and pellucid; older ones generally somewhat opaque, a little wrinkled longitudinally; and very finely striated transversely, only observable by the aid of a glass; the *Columella* is not visible to the end. Length one inch; breadth three-quarters of an inch.

DA COSTA mentions this species as being found at *Weymouth*, but rare, and has quoted the *B. Ampulla* of PENNANT for his shell; probably for no other reason than that the *Ampulla* was not known to him as *English*.

It does not appear to be uncommon on some parts of the western coast. We observed it in the cabinet of Mr. BRYER at *Weymouth*, and was informed by that gentleman, that he had frequently picked it up between that place and *Portland*.

DoctOR PULTENEY found it in the harbour at *Poole*, where we also noticed it; but no where so plentiful as on *Studland* beach, in *Purbeck*: an easterly wind having prevailed for some time, a large quantity of *algæ* was thrown upon this extensive sandy shore, amongst which were thousands of these shells, in all stages of growth, from the largest to the most diminutive, not equal in size to a hemp-feed; most of which contained the animal.

We have likewise taken it in *Salcomb* bay in *Devonshire*, and at *Southampton*, but have never been able to ascertain it on any more eastern or northern part of our coast.

It is said to be a *Mediterranean* species, and is described by GMELIN as like the *B. aperta*; surely he could never have compared these two shells: if he had likened it to the *Bulla Naucum* we should have coincided with him in simile.

The animal inhabitant is a shapeless mass, destitute of either eyes or *tentacula*; the head, or forepart, has a transverse opening, which runs along the sides, and forms fin-like membranes, that expand on part of the under side of the
the

the shell: the skin is warty, tough, and of a dusky-brown colour. The gizzard or stomach is a very singular structure: it is small in proportion, and consists of three sub-oval, corneous plates, held together at their edges by ligaments, and surrounded by a strong, cartilaginous, or muscular substance: it is of a sub-triangular shape, with the alimentary canal attached to its centre. The plates on the inside are well formed for comminuting its food: they are of a dark purplish-brown, or chocolate colour, with a longitudinal ridge, and several transverse furrows on each; the upper parts reflect outward, and are bare of covering even when connected together, so that their structure is partly seen without opening the stomach: the lower part of the gizzard is convex and muscular.

To a conchologist, perhaps, it would be difficult to describe the appearance of the corneous organs of digestion better, than by saying they resemble so many small *Chitons*.



Bulla Akera: *Gmel. Syst.* p. 3434.

11.

AKERA.

Turt. Lin. iv. p. 358.

Bulla soluta parva. *Chem. Conch.* x. t. 146. f. 1358. No. 1. 2. 3.

Bulla soluta magna. *Id.* x. t. 146. f. 1359. 1361?

Bulla soluta. *Gmel. Syst.* p. 3434. 48?

Turt. Lin. iv. p. 358.

Bulla refiliens. *Don Br. Shells.* iii. t. 79.

B. with an extremely thin, pellucid, horn-coloured shell, of an elastic nature: shape oval, somewhat wrinkl-

ed longitudinally; *apex* obtuse, convoluted, canaliculated; the volutions even with the body: aperture large at the base, much contracted at the top; the outer lip extremely thin, frequently only a film, the upper part of which lies close to the body whirl, but does not adhere until it has taken almost one volution: pillar lip a little thickened, and white. Inside white; *Columella* visible to the end. Sometimes this shell is so excessively thin, that it is scarce more than membranaceous, except the body part, and is not so pellucid: others are almost transparent horn-colour within and without.

The remarkable character of this species is its elasticity; for though it seems so extremely delicate, as scarce to bear handling, yet it is so tough and flexible, that it does not easily break. Length about three-quarters of an inch; breadth not quite half an inch.

This singular, and elegant shell has been confounded with the *B. Hydatis*, though so essentially different. We have seen it placed with that species in more cabinets than one. It is true their general habit is somewhat similar; but the elasticity, and external volutions of this, are at once sufficient to distinguish it: besides, the *Columella* is visible to the end in this, which is not the case in the other.

DONOVAN has given several very good figures of it, but of an extraordinary size; and says, it was discovered some years ago on the shores of *Bamff* in *Scotland*; and since that, at *Lymington*, and in a moat near *Portsmouth*.

This

This author observes, that in a young flate it has the appearance of a winged insect, and sports in its watery element with all the liveliness of a butterfly, and formed a pleasing object when kept alive in a glass of sea-water.

We have found this species in the harbour at *Poole*; and on the shore near *Southampton*, it is by no means uncommon between that town and the *Itchin*, where the fishermen call them *sea-snails*, and assured us they were very lively in the water in warm weather, and sometimes quitted their shells; this circumstance however is to be doubted. CHEMNITZ has described and figured it very well, and speaks of it as a *Dutch* and *Norwegian* shell: he has also given another from *Ceylon*, which seems to differ only in being of superior size.



Bulla cylindracea. *Br. Zool.* t. 70. f. 85.

Don. Br. Shells. iv. t. 120. f. 2. 2.

Lister Conch. t. 714. f. 70.

Bulla cylindrica. *Pult. Cat. Dorset.* p. 40.

12.

CYLINDRACEA.

Tab. 7 f. 2.

B. with a slender, cylindric, smooth, glossy, white shell; aperture the whole length, very narrow, a little dilated at the base: no external volution, but in its place a deep *umbilicus*: outer lip thin, acute, straight: inner lip thickened, opaque white: *Columella* a little indented. Length five-eighths of an inch: breadth not two-eighths.

Doct^r PULTENEY informs us, this rare shell has been found

found at *Weymouth*. We have taken it at *Falmouth* in *Cornwall*, and in *Devonshire*, about *Teignmouth* and *Dawlish* in the south, and *Biddeford* bay in the north: also on the coast of *Caermarthenshire*, sparingly.

LISTER mentions it from *Barnstable*.

This species has frequently been confounded with the *Voluta pallida*, but is at once distinguished by not being convoluted, and in the *Columella* being destitute of folds.

Mr. ADAMS is mistaken in the distinguishing characters between this and the *V. pallida*, (*Lin. Transf.* vol. iii. p 253.) by saying this has no polish: his specimen must have been worn. It has not, indeed, so fine a polish; but recent shells possess considerable gloss.

DOCTOR TURTON has given the *B. cylindracea* of PENNANT, for the *B. cylindrica* of GMELIN, which is a very different shell.



13.
UMBILICATA.
Tab. 7. f. 4.

B. with an oblong-oval, smooth, white shell: *apex* rounded, *umbilicated*: aperture extremely narrow, the whole length of the shell, dilating a little at the base. Length one-eighth of an inch; breadth one half its length.

This shell has much the habit of *B. cylindracea*, but is not so cylindric, and is broader in proportion to its length.

We

We found this species, sparingly, amongst sand from *Falmouth* harbour.



Bulla truncata. *Lin Trans.* v. t. 1. f. 1. 2. (*Adams.*)
Turt. Lin. iv. p. 358.

14.
TRUNCATA.
Tab. 7. f. 5.

B. with a sub-cylindric, opaque, white shell; the upper part longitudinally striated, the lower plain: *apex* truncated, and largely *umbilicated*, shewing the involutions: aperture the whole length, extremely narrow, but dilated a little at the base, and contracted most in the middle.

This shell has somewhat the habit of the last, and of the same size; but differs in being truncated at the top, in the involutions being conspicuous within the *umbilicus*, and in being partly striated. We found this not uncommon in sand at *Falmouth*; rare from *Salcomb* bay, *Devonshire*, and *Weymouth*.

Worn shells are sometimes destitute of striæ.

Not *B. truncata* of GMELIN.



Bulla crassa, apertura medio coarctata. *Walk. Min. Shells.* f. 62. OBTUSA.
Bulla Regulbiensis. *Turt. Lin.* iv p 351. Tab. 7. f. 3.
Adams. Microsc. t. 14. f. 28.

15.

B. with

B. with a moderately strong, sub-cylindric, opaque white shell, wrinkled longitudinally: apex convoluted, obtuse; volutions four or five, very little produced: aperture nearly the whole length of the shell, narrow, rather more compressed in the middle, dilated at the base: inner lip thickened, smooth, white.

Length two-tenths, rarely a quarter of an inch; breadth about half its length.

We were first favoured with this species from Mr. BOYS, for the shell figured by Mr. WALKER, as above quoted; and have since found it in great abundance on the shore near *Southampton*; rarely at *Salcomb* in *Devonshire*: and not uncommon about *Laugharne* on the coast of *Caermarthenshire*.

In a recent state it is frequently covered with a chestnut-coloured *epidermis*. It was once sent to us for the *Voluta pallida*; but from that shell it is readily distinguished by being much shorter, the volutions more deeply divided, more obtuse, and in wanting the essential character of a *Voluta*, the plicated *columella*. It is, indeed, more nearly allied to the last species of *Bulla*, but differs not only in being much larger, but in the produced volutions, and the aperture not reaching quite to the top, as well as being destitute of the regular longitudinal striae on the upper part of the shell.

B. with

B. with a smooth, glossy, pellucid, white, sub-oval shell; body large, ventricose, with three very small volutions: *apex* somewhat pointed, but not much produced: aperture sub-oval, nearly the length of the shell; outer lip attenuated; inner lip smooth; *Columella* plain, not visible to the end. Length rarely exceeding three-eighths of an inch; breadth two-eighths.

This is a scarce species, found only in *Salcomb* bay, except one mutilated specimen at *Falmouth*; from the former place we have taken it alive by dredging, adhering to the inside of old oyster shells.

Is so extremely thin and brittle, that it is difficult to obtain perfect; and is sufficiently transparent for the *Columella* to be seen through the shell.

It is not very unlike the figure of *Voluta Jonensis* in the *British Zoology*, but not quite so long, and the outer lip spreads more upwards; it cannot, however, be that shell, as it wants the plicated *Columella*, the essential character of that genus.

Conchologists have thought that some of the *Cyprææ* assume a very different appearance, in their young and adult states; such a prevailing opinion, from perhaps a single instance in a foreign species, possibly not well authenticated, may lead to a conjecture that this is no other than the young of *Cypræa Pediculus*; a circumstance

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which

which has been hinted by one or two of our conchological friends. To this we shall only observe; the animal is essentially different, not possessing any of that beautiful membrane which the animal of *Cypræa Pediculus* throws over the whole of its shell; but is like a common aquatic *Limax*; of a pale colour.

17.

FONTINALIS.

- Bulla fontinalis*. *Lin. Syst.* p. 1185. — *Gmel. Syst.* p. 3427. 18.
Lister Conch. t. 134. f. 34. — *Id Ang.* t. 2. f. 25.
Chem. Conch. ix. t. 103. f. 877. 878.
Pult. Cat. Dorset. p. 40. — *Gualt.* t. 5. C. C.
Schroet. Flussconch. t. 6. f. 11.
Turt. Lin. iv. p. 352.
Planorbis Bulla. *Muller Verm.* p. 167. No. 353.
Turbo adversus. *Da Costa* p. 96. t. v. f. 6. 6.
Favan. t. 61. E. 9.

B. with four or five reversed volutions, of a glossy, pellucid, light horn-colour: the body whirl large, the others very small, and not much produced: aperture oblong-three-fourths the length of the shell.

Old shells are somewhat striated, or rather wrinkled longitudinally, with two or three faint transverse ridges on the body whirl. Length half an inch; breadth a quarter.

This species is not uncommon in stagnant pools, as well as running waters, in many parts of the kingdom; but is in general, not above half the size described.

It

It is most frequently found on the under part of the leaves of aquatic plants.

The animal is of a light colour, with a yellowish cast: *Tentacula* two, setaceous, long: eyes two, black, placed underneath, at the base of the *Tentacula*. When in motion, it covers great part of the shell with a thin, pinnated membrane, thrown out on the right side, extending quite behind, and partly on the left side, covering the smaller volutions: this membrane is very deeply divided or digitated, the points of which meet, and sometimes intersect on the back of the shell; and are so transparent as scarce to be distinguished, but by the assistance of a glass. The *Sustentaculum*, or foot, is long and narrow: the *foramen*, or common aperture, is on the left side, as must be the case with all the animals of this kind inhabiting *heterostrophe* shells.

It has very considerable loco-motive power, and transports itself by adhering to the surface of the water, with the shell downwards: against which it crawls with as much apparent ease as on a solid body; and will sometimes let itself down gradually by a thread affixed to the surface of the water, in the manner of the *Limax filans** from the branch of a tree.

The property of crawling under water, against its surface, is not wholly confined to this species; but we know of no other testaceous animal capable of suspending itself under water in the same way.

* For an account of the *Limax filans*, see *Lin Trans.* vol. iv. p. 85. tab. 8.

It has the power of throwing its shell about in an extraordinary manner, either in defence, or to remove obstructions, continuing at the same time fixed by its foot. Probably this singular motion is sometimes occasioned by a minute species of *Hirudo*,* which infests this and many other fresh-water testaceous animals; twenty or more may be seen adhering to its sides like slender white filaments. This *Leech* is not uncommon on the *Helix peregra*, *H. fossaria*, and *H. nautilus*; as well as the *Patella fluviatilis*; and probably on all other animals belonging to univalve *testacea* at particular seasons, which inhabit fresh-water.

18.

HYPNORUM.

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- Bulla Hypnorum. *Lin. Syst.* p. 1185.
Gmel. Syst. p. 3428. 19.
Chem Conch. ix. t. 103. f. 882. 883. a. b. c.
Turt. Lin. iv. p. 353.
Schroet Flussconch. t. 6. f. 9. & f. 15. a. b.
- Bucc. heterostrophon. *Lister Conch.* t. 1059. f. 5.
Petiv. Gaz. t. 10. f. 8.
Favan. t. 61. F. 18.
- Turbo *Walk Min. Shells.* f. 54.
- Planorbis turritus. *Muller Verm.* p. 169. No. 354.

B. with five or six, reversed, taper, smooth, glossy, pellucid, horn-coloured spires: the body-whirl half the length of the shell, the others tapering to a fine point; aperture narrow at the top, spreading a little at the base; outer lip extremely thin; pillar lip a little thickened:

* *Gordius inquilinus.* *Mull. Verm.* i. p. 33. No. 164.

Columella within somewhat indented. Length five-eighths of an inch; breadth two-eighths.

This species has sometimes been confounded with the last described, but is readily distinguished by its taper, produced spires; and by the aperture, which is much shorter, and more contracted: is also much more glossy, and of a darker colour. It is a more local shell; we have found it tolerably plentiful in a watery ditch near *Exeter*; and in *Wiltshire* of an extraordinary size, measuring nearly three-quarters of an inch. In a pond, subject to be overflowed by the *Avon* in that county, we have seen great abundance; and in the same field were plenty of the *B. fontinalis*, and yet they had never communicated with each other, for in neither place were they to be found together. This is PETIVER'S *Buccinulum fluviatile heterostrophon*; who says, it is found in some ponds and ditches about *London*. We have received it from *Kent*.

DA COSTA was unacquainted with this shell, but erroneously quoted it for his *Turbo adversus*; the *Bulla fontinalis* of LINNÆUS; as is evident by his description and figure.

This and the preceding are two of the few known species which are *heterostrophe* shells, or turn from right to left, from the *apex* to the aperture; that is, the spires represent a left-handed screw, turning contrary to the sun's apparent motion.

Both.

Both LINNÆUS and GMELIN appear to be perfectly unacquainted with the natural history of this shell, having described it to inhabit wet moss, which bespeaks it to be a land shell; whereas, it is an aquatic; the animal of which is incapable of residing out of water. The latter author has also expressed his doubts, whether it was not a variety of *B. fontinalis*. How such doubts could ever have existed, even from a comparison of the two shells, independent of their natural history, is very extraordinary: the animals too are essentially different.

Animal dusky-black; *Tentacula* two, moderately long, fetaceous, black; eyes placed on the head, at the base of the feelers: *Sustentaculum* not quite so long as the shell.

No fins, or membrane that covers the shell, like that of the *Bulla fontinalis*.


 GEN XXII.

VOLUTA.


 Animal a LIMAX.

SHELL, univalve, spiral.

Aperture, longitudinally extending near the whole length of the shell, ecaudated.

Columella, plicated : no *umbilicus*, nor interior lip.

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- Voluta tornatilis. *Lin. Syst.* p. 1187.—*Gmel. Syst.* p. 3437,
Lister Conch. t. 835. f. 58.
Martini Conch. ii. t. 43. f. 442. 443.
Br. Zool. t. 71. f. 86.
Pult. Cat. Dorset. p. 41.
Don. Br. Shells. ii. t. 57.
Turt. Lin. iv. p. 260.
 Turbo ovalis. *Da Costa* p. 101. t. 8. f. 2. 2.

 I.
 TORNATILIS.

V. with an oval shell of eight spires, the first very large,
 the others small, and tapering to an extreme fine point :
 of

of a pale purplish red, finely striated spirally; with two white *fasciæ*, or bands, on the body whirl: aperture long and narrow; outer lip thin; *Columella* with one fold. Length three-quarters of an inch.

This elegant species appears to be local, and rather scarce upon the *English* coast. DA COSTA says he received it from *Teignmouth* and *Exmouth* in *Devonshire*. It must, however, be extremely rare at those places, as a long continuance there never furnished us with a single specimen: but further to the west on the same coast, at *Torcrofs*, we have sometimes taken it by dredging.

DOCTOR PULTENEY speaks of it as rare in *Dorsetshire*, but that it has been found at *Weymouth*.

Mr. PENNANT notes it from *Anglesea*.

We found it not un plentiful on the flat, sandy shore, near *Laugharne* in *Caermarthenshire*, among the drifted sand about high-water mark: at this place a diligent searcher might pick up a dozen in a morning. Is also found sparingly on other parts of the south coast of *Wales*.

2.

PALLIDA.

- 
- Voluta pallida.* *Lin Syst.* p. 1189.—*Gmel Syst.* p. 3444. 30.
Lifter Conch. t. 714. upper left hand figure.
Lin Trans. iii. p. 253. (*Adams.*)
Turt. Lin. iv. p. 365.
Bulla cylindracea. *Da Costa.* p. 31. t. 2. f. 7. 7.
Bulla pallida. *Don. Br. Shells.* ii. t. 66.

V. with

V. with a smooth, glossy, white, cylindric shell: upper volution extremely small, and scarcely defined by a separating line: *apex* obtuse: aperture narrow, extending near the length of the shell, spreading a little at the base; outer lip thin: *Columella* plicated, with four strong folds. Length half an inch; breadth a quarter.

It is very extraordinary DA COSTA should have made this the *Bulla cylindracea* of the *British Zoology*, a shell neither convoluted nor plicated on the *Columella*. Mr. PENNANT expressly says, his shell is *umbilicated* at the end: a character sufficient to distinguish it from this.

The *V. pallida* is certainly a very rare species on the *British* coast. DA COSTA must have been misinformed with respect to its being found plentiful on the western coasts, for not a single specimen has ever come within our frequent researches in those parts; nor does Doctor PULTENEY mention it in his *Catalogue of Dorsetshire Shells*. Mr. ADAMS, however, notes it from *Tenby*.

This shell is of a finer polish, and smoother than the *Bulla cylindracea*; broader in proportion to its length, the aperture not so much contracted, and is at once distinguished by the true characters of a *Voluta*.

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Voluta Jonensis. *Br. Zool* t. 71. f 87.
Turt. Lin iv. p. 360.

3.
JONENSIS.

H h

V. with

V. with a very thin, brittle shell, with two small spires. Inhabits the isle of *Jona*, or *Y Columb-kil*.

This is all Mr. PENNANT says of the shell. Was it not placed in the *British Zoology* as a *Voluta*, we should have been inclined to think it a variety of our *Bulla diaphana*.



4.

DENTICULATA.

Turbo bidentata. *Walk. Min. Shells*. f. 50, & f. 53. young.

V. with seven or eight volutions, tapering to a fine point, the lower one large, the others gradually decreasing: of a semi-pellucid horn-colour, inclining to purplish-brown towards the top: aperture oblong-oval, half the length of the shell; outer lip furnished with two or three tubercles near the margin, and frequently with three or four white denticulations further within the aperture: *Columella* plicated, with three or four white folds, which are much elevated, and appear like teeth, but spirally turn with the *Columella*. Length near half an inch; breadth not a quarter. It is subject to some variety with respect to the denticulations on the outer lip; some have more, others less, or even destitute of them in young shells: the plications on the *Columella* vary also from two to four, but most commonly three.

If we had not received this shell from Mr. BOYS for WALKER'S *Turbo bidentata*, as above quoted; we should hardly have considered it as the same; as he says it is found

on

on the roots of rushes in marshes near *Faversham*. Possibly the marshes where they were found, were subject to the flux of the tide; for it is evidently a marine shell. We have found it plentiful on the shore between *Plymouth* and *Dock*, feeding on *algæ* at high-water mark; and also sparingly on another part of the south coast of *Devonshire*, as well as at *Barnstable* and *Ilfracomb* in the north; near *Aberavon* in *Wales*; and at *Southampton*.

Very young shells sometimes possess only one fold on the *Columella*; in which state we consider it to be WALKER'S shell, figure 53.

A remarkable character of this shell is, that the *Columella* extends no further than the upper part of the body volution; the superior spires being destitute of any pillar, or internal spiral division.



Voluta alba opaca longitu- *Walk. Min. Shells. f. 61.*

dinaliter friata.

Turt. Lin. iv. p 361.

Adams Microsc. t. 14. f. 27.

5.

ALBA.

V. with an oval, white shell, with four volutions, finely friated: aperture long, narrow. Length one tenth of an inch.

Mr. BOYS favoured us with this minute species, for WALKER'S shell above quoted. It is opaque, but glossy. Said to be not uncommon at *Sandwich* and *Shepey Island*.

6.

CATENATA.

Tab. 6. f. 2.

V. with an oblong-oval, strong, sub-pellucid, white, and extremely glossy shell, with four bands of opaque, white, oblong spots, connected by small rufous spots or streaks, in a very elegant manner, like so many small chains: upper volution scarcely defined; *apex* indented, involuted: aperture the whole length of the shell, linear: outer lip thick, but not margined, and obsoletely denticulated: *Columella* quadruplicated, with two strong, and two faint folds. Length a quarter of an inch; breadth at the top one eighth. We observed several of this new and elegant species in Mr. SWAINSON'S cabinet of *British* shells, under the title of *Cypræa catenata*; who obligingly favoured us with a specimen.

The trivial name we have therefore continued it by, but have been induced to place it in this genus, from the structure of the *Columella*, and not being denticulated on the inner lip: It is, however, a connecting link between the two *genera*. We are wholly indebted to that Gentleman for all we have been able to collect concerning this shell: who, in a letter upon the subject, says,

“I never found this shell alive; I got three or four dead specimens, in the sediment at the bottom of pools of water, (if they may be so called) left in the holes of the rocks in *St. Austle* bay, near *Fowey*: have heard of its being taken off the *Lizard*, and also at *Penzance*.”

Is said to be found in *Guernsey* of a superior size.

GEN.

GEN XXIII.

BUCCINUM.

Animal a LIMAX.

SHELL, univalve, spiral, gibbosa.

Aperture, ovate, ending in a short canal or gutter, to the right.

- Buccinum undatum. *Lin. Syst.* p. 1204.
Gmel. Syst. p. 3492. 93.
Lister Conch. t. 962. f. 14. 15.
Id. Angl. t. 3. f. 2. 3.
Martini Conch. iv. t. 126. f. 1206. 1211.
Br. Zool. No. 90.—*Turt. Lin.* iv. p. 404.
Pult. Cat. Dorset. p. 42.
- Buccinum vulgare. *Da Costa* p. 122. t. 6. f. 6. 6.
- Buccinum striatum. *Br. Zool.* t. 74. f. 91.
Turt. Lin. iv. p. 404.

1.

UNDATUM.

B. with seven or eight, ventricose spires, undulately ribbed, transversely striated, and crossed with finer longitudinal striæ.

This

This common species is strong, and grows to a large size, frequently five inches in length; is subject to vary in colour, from white to chestnut-brown, but more frequently the former, in part tinged with rufous-brown. In some shells the ribs are strong; others are only a little ribbed towards the top; this variety is the *B. striatum* of Mr. PENNANT.

There are scarce any of our shores but what produce this shell. Is commonly taken in dredging by fishermen, who either use the animal for bait, or destroy it, from a supposition that it is very destructive to the large scollop, *Pecten maximus*: by insinuating its tail (as it is termed) into the shell, and destroying the inhabitant: this we have been assured they will do even in a pail of sea water.

Small shells are sometimes very thin, and prettily marked with brown: old ones are frequently covered with a brown *epidermis*, or rough extraneous matter.

The spawn of this species is found in large clusters upon most parts of our coast, in which the young are frequently seen. In this state, and for some time after they are excluded, they have an obtuse globular *apex*; and have been described as a distinct species. The *Murex decollatus* of PENNANT and DONOVAN is no other than this, or the fry of *Murex despectus*.

Buccinum Lapillus. *Lin. Syst.* p. 1202.—*Gmel Syst.* p. 3484. 53. LAPILLUS.

Lister Conch. t. 965. f. 18. 19.

Id. Angl. t. 3. f. 5. 6.

Martini Conch. iii. t. 121. f. 1111. 1112.

Id. iv. t. 122. f. 1124. 1125. & var.

Petiv. Gaz. t. 18. f. 5.

Br. Zool. t. 72. f. 89.—*Turt. Lin.* iv. p. 397.

Pult. Cat. Dorset. p. 41.

Don. Br. Shells. i. t. 11.

Purpuro-Buccinum. *Da Costa.* p. 125. t. 7. f. 1. 2. 3. 4. 9. 12.

B. with a thick shell, with five or six spires, strongly striated spirally, and fine, elevated, irregular, undulated striæ, longitudinally: *apex* small, pointed: aperture oval; outer lip waved, or sub-denticulated; pillar lip smooth, replicated. Length rarely exceeds two inches; breadth an inch.

This species is subject to great variety; in some the longitudinal striæ are membranaceous and sharp; others are almost smooth and destitute of any: the colour is usually dirty-white, or yellowish; but sometimes prettily banded with chestnut-brown, or yellow. Young shells vary so much in shape as scarcely to be ascertained; some are extremely ventricose in the body whirl, with the upper volutions very small; and the whole shell muricated with concave, spinous ridges: others are more taper, and only spirally ridged.

This is one of the most common shells upon our coast, adhering to rocks quite up to high-water mark.

The

The famous purple, or *Tyrian dye*, has been, amongst others, extracted from the animal of this shell, an account of which is detailed in the *Philosophical Transactions*, No. 1684 by Mr. COLE; and is inserted in DA COSTA and the *British Zoology*. M. REAUMUR has also written upon it, in the *Paris Memoirs* for the years 1712 and 1717. It is supposed that singular and beautiful dye is yielded only by the *ovarium*; if so, it is no wonder many have been disappointed in their researches for it, as probably it is only to be found at a certain season of the year, when that part is dilated by impregnation.



3.

RETICULATUM.

Buccinum reticulatum. *Lin. Syst.* p. 1264.

Gmel. Syst. p. 3495. 111.

Martini Conch. iv. t. 124. f. 1162. to 1164

Lyster Conch. t. 966. f. 21.

Br. Zool. t. 72. f. 92.

Turt. Lin. iv. p. 406.

Da Costa p. 131. t. 7. f. 10.

Pult. Cat. Dorset. p. 42.

Don. Br. Shells. iii. t. 76.

Buccinum vulgatum. *Gmel. Syst.* p. 3496. 120.

Martini Conch. iv. t. 124. f. 1165. 1166.

Buccinum Pullus. *Br. Zool.* t. 72. f. 88.

B. with a strong, reticulated shell, with seven or eight costated volutions tapering to a fine point, and wrinkled with transverse elevated striae, which rise into tubercles upon the ribs, and gives it a decussated appearance: aperture

ture sub-oval; outer lip even, not thickened at the back, denticulated within; inner lip replicated, glossy white, sometimes faintly crenated: colour usually brown.

A variety has the outer lip attenuated, and no denticulations: another variety is smaller, with the ribs more distant, and sometimes with one rib larger and more raised than the rest; colour purplish brown: inside purple. This appears to be the *B. vulgatum* of GMELIN, and the *B. Pullus* of PENNANT. It must, however, be remarked, that all these varieties run so much into each other, both in the ribs and colour, that no permanent distinction can be made.

Worn shells sometimes become quite white, especially the young ones. The largest shells are an inch and a half long, and nearly three-quarters wide at the base. Common on many of our shores.



Buccinum minutum. *Br. Zool.* t. 79. inner angle beneath left hand. 4.
MACULA.

Buccinum minimum. *Turt. Lin.* iv. p. 387. Tab. 8. f. 4.

B. with six or seven ribbed spires, transversely striated like the *B. reticulatum*: apex pointed: aperture sub-orbicular; outer lip gibbose at the back, denticulated within; inner lip replicated, and faintly denticulated: colour various, mottled rufous, brown, and white, or wholly pale purple, and sometimes red; but rarely wholly white. In

all these variations it preserves the invariable characteristic mark of a small spot of a dark purplish colour at the outer edge of the canal; and has generally a purplish tip. It is at once distinguished from the young of *B. reticulatum*, by the gibbose outer lip. The length of this species rarely exceeds half an inch; breadth one quarter of an inch.

It is not uncommon in some of the small bays about *Falmouth*; we have also found it on the north and south coasts of *Devonshire*, in *Dorsetshire*, and in *Wales*: and once received it from a friend on the *Kentish* coast for the *B. Pullus* of LINNÆUS, but is certainly not that shell.



5.

AMBIGUUM.

Buccinum ambiguum. *Pult. Cat. Dorset.* p. 42.

Tab. 9. f. 7.

B. with a thick, strong, sub-conic, white shell, with six strongly ribbed spires, finely striated transversely: the ribs are distant, and swell at the junction of each spire into knobs or tubercles: aperture sub-orbicular; outer lip thickened by the rib, slightly denticulated; inner lip replicated, with generally two faint distant folds. Length rather more than half an inch; breadth three-eighths.

We were first favoured with this species from Doctor PULTENEY, who says, it is found between *Weymouth* and *Portland* on the sands, and on the north shore at *Poole*. The Doctor is certainly mistaken, in quoting the *B. Pullus* and *B. minutum* of PENNANT for this shell; the former being only a variety of the *B. reticulatum*, and the latter

latter we believe our *B. Macula*. This is perfectly distinct from either of those shells, not only in being much broader in proportion to its length, but in the ribs being much more distant, and gibbose at the spiral junctures. It is, we believe, a very rare species: many of those we have examined, were stained in part with a ferruginous colour, not natural to the shell.

Mr. BRYER, who has taken several of these shells on the shore between *Weymouth* and *Portland*, informed us, they were all of that colour; though we observed several in Doctor PULTENEY'S cabinet perfectly white, that appeared to be live, or recent shells.



Buccinum hepaticum. *Pult. Cat. Dorset.* p. 41.

Lister. Conch. t. 975. f. 30.

6.

HEPATICUM.

Tab. 8. f. 1.

B. with a strong, brownish shell, with seven or eight ribbed volutions: a transverse line, or depression, near the top of each spire; which, cutting the ribs, forms that part into small knobs; in other respects it is smooth, except a few striæ at the base of the body whirl, and is somewhat glossy: the volutions are rather tumid, and strongly divided; *apex* sharp: outer lip thick, turning inwards to an edge, beneath which are several denticulations or striæ; inner lip folded back, with one tooth-like ridge on the upper part: colour a little varying with a few ferruginous spots, and sometimes a white *fascia* on the inside of the outer lip. Doctor PULTENEY favoured us with this species,

which he says is found in *Purbeck*, and dredged up at *Weymouth*; but rarely.

It seldom exceeds an inch in length; and five-eighths of an inch in breadth.



7.

BILINEATUM.

Buccinum bilineatum. *Gmel. Syst.* p. 3476.

Turt. Lin. iv. p. 391.

Buccinum porcatum. *Pult. Cat. Dorset.* p. 41.

Buccinum decussatum. *Br. Zool. App.* t. 79. two bottom figures.

Lister Conch. t. 998. f. 63.

B. with an ovated, smooth, whitish shell, girdled with two, three, or four bands of brown spots; the upper part set round with two series of tubercles, upper volutions smooth: aperture large, sub-oval; outer lip slightly dentated; inner lip rugose, and granulated.

Foreign specimens exceed two inches in length: that figured by Mr. PENNANT is a young shell, scarcely an inch long, and was found at *Weymouth*.



8.

PERDIX.

Tab. 8. f. 5.

Buccinum Perdix. *Lin. Syst.* p. 1197.—*Gmel Syst.* p. 3470. 3.

Lister Conch. t. 984. f. 43.

Martini Conch. iii. t. 117. f. 1078. 1080.

Pult. Cat Dorset. p. 41.—*Gualt.* t. 51. f. F.

Turt. Lin. iv. p. 385.

B. with

B. with a sub-oval shell, with five or six volutions; the first very large and tumid, the others small in proportion, marked with flat, transverse ridges, broader than the interstices: colour yellowish-brown, marbled and spotted with white: aperture large, oval; outer lip thin, plain; lower part of the inner lip a little replicated, forming a *sub-umbilicus*.

Exotic shells grow to a large size; those which have been found in *England* are not larger than a hazel nut, as we are informed by Doctor PULTENEY; who says, it has been dredged up at *Weymouth*, and thrown up after storms. We observed it in Mr. BRYER'S cabinet, who assured us he found it on the same coast.



Buccinum lineatum. *Da Costa*. p. 130. t. 8. f. 5.

Pult. Cat. Dorset. p. 41.

Don. Br. Shells. i. t. 15.

Turt. Lin. iv. p. 387.

LINEATUM.

B. with a strong, smooth, conic shell, with five or six volutions, regularly banded with alternate, spiral lines, of chocolate-brown and white, that gives it the appearance of being striated: *apex* sharp, pointed: aperture oval; outer lip a little spreading, margin marked by the brown lines, that look like *crenulæ*. Length a quarter of an inch; breadth one eighth.

DA

DA COSTA says, this shell is found in great abundance in *Cornwall*, but does not mention any-particular part of that coast. If we did not know that shells are extremely local, we should be induced to think he had been deceived; as we never could find it on any of the shores in that county, nor in *Devonshire*. DOCTOR PULTENEY says, it is common on the coast of *Dorset*; sometimes in great numbers adhering to *fuci* and grass wrack.

On such good authority the existence of this shell as *English* could not be doubted, though we always considered it as extremely rare, or at least very local; never having been fortunate enough to find it till lately, and that sparingly, between *Weymouth* and *Portland*. From the same place we have been favoured with several specimens from Mr. BRYER, amongst which was one entirely white, and another variety lineated with pale brown and white.



10.

CINCTUM.

Tab. 15. f. 1.

B. with a conic, white shell, marked with a fine thread-like girdle, of a rufous-brown colour, round the middle of each spire: volutions six or seven, nearly even, finely and closely ribbed, and obsoletely striated transversely in the depressions between the ribs: *apex* sharp: aperture narrow, oval; outer lip thickened with a broad rib at the back, and denticulated within; inner lip sub-crenulated by the transverse striae at the base; on the edge of the outer lip, near the end, is a small rufous spot, and another at the upper angle of the aperture; from these,

two

two obsolete broken lines are to be traced round the base of the shell.

Whether these markings are permanent characters, we dare not determine, as only one specimen of this new shell has come under our examination: but in other respects is so very different from any *British* species of *Buccinum* hitherto described, that it cannot be confounded.

Found by Mr. BRYER on the shore near *Weymouth*, together with several other new and rare shells, which will enrich this work. Length barely a quarter of an inch.



B. with a strong shell, with five reticulated, taper spires: MINIMUM.
 the ribs that run longitudinally are considerably raised, Tab. S. f. 2.
 which being cut by the transverse striæ, gives it a decussated appearance: aperture oval; both lips smooth: colour varying from light to dark chestnut-brown, without any spots or markings. Length scarce two-tenths of an inch, and more than double its breadth.

We found this species in considerable abundance on the south coast of *Devon*, at the mouth of the *Aun*, amongst the drifted sand; and rarely alive by dredging at *Salcomb* and *Torcrofs*.

It does not appear to be noticed before by any conchologist and is probably a local shell.

Buccinum

TERRESTRE.
Tab.S. f. 3.

- Buccinum Acicula. *Muller. Verm.* p. 150. No. 340.
Walk. Min. Shells. f. 60.
Gualt t. 6 B. B.
- Buccinum longiusculum. *Adams. Microsc.* t. 14. f. 26.
- Buccinum obtusulum. *Turt. Lin.* iv. p 416.
Schroet. Flussconch. t. 8. f. 6. a. b.
Id. Erdconch. p. 142.

B. with six slender, smooth, glossy, pellucid, white spires, terminating in an obtuse point: the volutions not much raised, but well defined by the separating spiral groove: aperture oblong, sub-oval; outer lip thin, even; pillar lip thickened, forming a small gutter: no teeth. Length a quarter of an inch; breadth scarce one fourth its length.

The remarkable characters of this shell are the uncommon obliquity of the spiral turns of the volutions, and the length of the first spire, which, more than double, exceeds that of the second, and is nearly equal to the three succeeding.

Mr. BOYS originally favoured us with this species for the shell figured by WALKER as above quoted; who states it to be found in *Faversham Creek* only; which implies it to be marine; but was doubtless carried there by some neighbouring stream; for it is a land shell.

We have procured it from the top of *Barham downs* in *Kent*, where it is common on the roots of the grass, and
under

under moss: and have found great abundance, amongst a variety of shells brought down by the floods in the river *Avon* at *Lackham* in *Wiltshire*. These are superior in size to those from *Kent*, but of course dead shells though perfect.

SCHRÖETER was at a loss whether to place this amongst his land or fresh-water shells, and has therefore given it a place both in his *Flussconchylien* and *Erdconchylien*; and what is extraordinary, has affixed to it the synonyms of *Helix oëtona*, notwithstanding he expressly says, it does not answer to the description of the *Linnæan* shell, as it neither has a *sub-umbilicus*, or roundish mouth.

MULLER has committed the same error, and has equally quoted GUALTERI's figure; which is a minute species, and not the least corresponding with the *Linnæan* description of *H. oëtona*.

GMELIN has continued the error of those authors, not having been acquainted with the shell in question; and, in order to correspond with their descriptions, tells us it has sometimes six spires, the first twice as large as the next; and the *umbilicus* inconspicuous. This, though it accords partly with SCHRÖETER's and MULLER's shell, certainly does not correspond with, "*testa subperforata turrita: anfractibus oëto, apertura subrotunda,*" the specific characters given by LINNÆUS to his *H. oëtona*.

That GUALTERI should make this an aquatic, is not surprising, as all our land-shells are occasionally carried

into streams and rivers, and cannot be ascertained but by a knowledge of their several animals; so that when a shell is found in water that has never before occurred, it has at once been considered as belonging to that element; and has led to innumerable errors.



13.

OBTUFULUM.

Buccinum obtufulum. *Turt. Lin.* iv. p. 387.

Adams Microsc. t. 14. f. 25.

Walk. Min. Shells. f. 59.

“The bellied whilk of three spires with an oval aperture: colour opaque white.” From *Faversham Creek*; very rare.

This is one of the few of Mr. WALKER'S shells we have not had an opportunity of examining; have therefore copied the description from his work. It is a microscopic species.



14.

BREVE.

Buccinum breve: testa quinque anfractibus: longitudinaliter costatis: transversim striatis: color albus opacus, caudâ brevissimâ. *Lin. Trans.* iii. t. 13. f. 3. 4. (*Adams.*)

Shell white, with five whorls, which are longitudinally ribbed and transversely striate. *Turt. Lin.* iv. p. 387.



15.

MINUTUM.

Buccinum minutum: tribus anfractibus: longitudinaliter costatis: color albus opacus. *Lin. Trans.* iii. t. 13. f. 5. 6. (*Adams*)

Shell

Shell white, opaque, with three whorls, which are longitudinally ribbed. *Turt. Lin. iv. p. 387.*



16.

Buccinum læve: testa lævi tribus anfractibus, cauda elongata: LÆVE, color albus opacus; anfractus primus secundo multo ventricosior; apertura ovalis.

Lin. Trans. iii. t. 13. f. 7. 8. (Adams.)

Shell smooth, with three whorls and a long beak. *Turt. Lin. iv. p. 387.*



17.

Buccinum obtusissimum: testa lævi, tribus anfractibus, apertura coarctata, cauda elongata. OBTUSISSIMUM.

A præcedente differt et in aperturæ forma, et quod anfractus ipsi sunt quam proxime magnitudinis æqualis.

Lin. Trans. iii. t. 13. f. 9. 10. (Adams)

Shell smooth, with three whorls, and a long beak: aperture contracted. *Turt. Lin. iv. p. 387.*

The four preceding shells we have been obliged to copy from Mr. ADAMS, who found them on the coast of *Pembroke-shire*; they are all microscopic species.

The two first seem to differ in nothing but the number of volutions. The two last appear to be young unformed shells not perfected at the *apex*; possibly the young of *Murex despectus* just escaped from the egg.

It must be remarked, that most turbinated univalve shells, when first produced, have few volutions, and their *apex* abrupt, swelling into a round knob: even the common garden snail, *Helix aspersa*, is so different in its infant state, as to have been considered a distinct shell: great care is therefore requisite in discriminating the minute species.

We have always rejected those whose *apex* was globose, and destitute of a finished spire.

GEN XXIV.

STROMBUS.

Animal a LIMAX.

SHELL, univalve, spiral.

Aperture ending in a canal to the left: outer lip for the most part much expanded.

Stromb. Pes Pelecani. *Lin. Syst.* p. 1207.

Gmel. Syst. p. 3507. 2.

Martini Conch. iii. t. 85. f. 848. 850.

Lister Conch. t. 865. f. 20. — t. 866. f. 21. b.

Br. Zool. No. 94.

Pult. Cat. Dorset. p. 42.

Don. Br. Shells. i. t. 4.

Turt. Lin. iv. p. 417.

Aporrhais quadrifidus. *Da Costa.* p. 136. t. 7. f. 7.

1.

PES PELECANI.

S. with a pyramidal shell, tapering to a fine point, with ten ribbed, or rather tuberculated, volutions; on the body whirl are two rows of smaller tubercles beneath the larger ones: outer lip much expanded, quadrifid, the upper angle

angle running far up the spire; the lower one formed by the tail or canal; these are more or less channelled beneath: flesh-colour. Length near two inches.

This shell is subject to great variety with respect to the outer lip, which increases by age: young shells have all the appearance of a *Murex*, without the least expansion of the lip, and all gradations are to be met with from that to the perfect shell.

DA COSTA speaks of this species as pretty general on many parts of the *English, Welch, and Scottish* coasts.

We have found it not uncommon at the mouth of the *Ex*, on *Dawlish Warren* in *Devonshire*, but rarely perfect, except after violent storms.

Live shells are sometimes obtained at *Torcrofs* by deep dredging; but more frequently old and worn specimens, which are invariably inhabited by a new and singular species of *Sipunculus*, who closes up the aperture with agglutinated sand, leaving only a small round hole, within which it recedes. This animal is capable of withdrawing its anterior part within the other, in the same manner that the common *Limax* draws in the larger *tentacula*, to which the eyes are affixed; it has no other mode of contracting or expanding.

The animal of the *S. pes. Pelecani* has a long snout, and two filiform *tentacula* of a pink colour; the former
spotted

spotted with white: eyes black, at the base of the *tentacula* beneath; *sustentaculum* short, white.



Strombus costatus. *Pult. Cat. Dorset.* p. 42.

Don Br. Shells. iii. t. 94.

Strombiformis costatus. *Da Costa* p. 118. t. 8. f. 14.

2.

COSTATUS.

S. with ten or eleven volutions of a dark brown colour, tapering to a fine point; furnished with numerous, fine, close-set ribs, and an elevated, spiral line, turning round the bottom of each volution, becoming double at the base of the shell, and is lost in the upper part: aperture sub-orbicular, outer lip a little expanded; inner lip smooth, with a sub-canal. Length rather less than half an inch.

It varies in colour from light brown to a deep chestnut, but usually the latter. In some the outer lip is a little thickened at the margin.

DA COSTA says this species is found on the coasts of *Cornwall*. We have taken it on *Milton* sands on the south coast of *Devon*; but is certainly a rare *English* shell.

GEN.

 GEN. XXV.

MUREX.

—◆—

Animal a LIMAX.

SHELL, univalve, spiral, most times rough with membranaceous folds, or knobs.

Aperture ending in a strait, entire canal: sometimes slightly reflecting.

1.

DESPECTUS.

Murex despectus. *Lin. Syst.* p.1222.—*Gmel. Syst.* p.3547. 74.
Lister Conch. t. 913. f. 4.—*Id. Angl.* p.155.
 t. 3. f. 1.

Martini Conch. iv. t. 138. f. 1292. & 1294.

Br. Zool. No. 98.—*Turt. Lin.* iv. p. 445.

Pult. Cat. Dorset. p. 43.

Don. Br. Shells. i. t. 31.

Buccinum magnum. *Da Costa* p. 120. t. 6. f. 4.

M. with a thick, strong, white shell, with seven or eight ventricose volutions, tapering to a fine point, faintly striated both transversely and longitudinally: aperture sub-oval; outer lip plain; inner lip replicated, smooth; *Columella*.

Snella at the base, in old shells a little twisted; tail, or canal, a little reflected; inside yellowish. Length five inches. Young shells sometimes of a ferruginous-brown.

This, the largest turbinated shell of the *British* seas, is local, but not uncommon in some parts. Inhabits the deep; sometimes dredged up with *Oysters*, and eaten by the poorer people; but more frequently used as a bait for *Cod* and other fish.

DA COSTA says, it is found in *Essex*, *Yorkshire*, *Scotland*, and *Ireland*. DOCTOR PULTENEY mentions it on the *Dorset* coast, but not plentiful. It must be extremely rare on the more western shores, as not a single specimen has ever occurred in *Devonshire*, or *Cornwall*: and we are assured by Mr. BRYER, it is a perfect stranger to the coast about *Weymouth*. Is sometimes taken in *Kent*.



Murex antiquus. *Gmel. Syst.* p. 3546. 73.

Don. Br. Shells. iv. t. 119.

Martini Conch. iv. t. 138. f. 1293. & 1296.

Br. Zool. No. 97.—*Turt. Lin.* iv. p. 445.

Murex carinatus. *Br. Zool.* t. 77. f. 96.—*Turt. Lin.* iv. p. 438.

Don. Br. Shells. iv. t. 109.

2.

ANTIQUUS.

M. with a strong shell of a pale brown colour: volutions eight, striated transversely, marked with faint longitudinal striæ: the middle of each volution rising into a strong, undulated, carinated ridge; sometimes two, but

the lower one is most usually faint; the two smallest volutions are generally smooth: aperture oval, ending in a long canal; outer lip even, except where the ridges terminate; pillar lip a little replicated, smooth; inside livid-white. Length three inches and a half.

This shell seems to be subject to great variety: some are irregularly ribbed, which rise into angulated protuberances on the carinated ridge; others are strongly bicarinated, without the angular undulations. Mr. PENNANT'S figure appears to have three plain ridges on each volution. GMELIN quotes a shell of MARTINI, which is not unlike our *despectus*. MARTINI seems to consider this as a variety of that shell, and has given several figures, that appear to run so much into each other, as to favour the opinion; one of which is not unlike the *carinatus* of the *British Zoology*. If it is a variety of the *despectus*, it is rarely found in our seas, except in *Scotland*; from whence we have received it.



5.
CORNEUS.

- Murex corneus. *Lin. Syst.* p. 1224.—*Gmel. Syst.* p. 3552.97.
Lister Conch. t.913. f.5.—*Id. Angl.* t.3. f. 4.
Br. Zool t. 76. f. 99.
Pult. Cat. Dorset. p.43.—*Turt. Lin.* iv.p.449.
Don. Br. Shells. ii. t. 38.
 Buccinum gracile. *Da Costa.* p. 124. t. 6. f. 5.

M. with eight strong, taper, white spires, transversely striated, and faintly wrinkled longitudinally; volutions rounded, divided by a strong separating line, or depression:
 aperture

aperture oblong-oval; canal long, and a little reflexed. Length three inches; breadth an inch and a quarter. Live shells are usually covered with a brown *epidermis*.

DA COSTA says it is found in *Yorkshire*, *Northumberland*, and *Essex*; and in the *Orknies*, and other shores of *Scotland*; as well as on the *Irish* coast.

DOCTOR PULTENEY speaks of it as not very uncommon on the *Dorset* coast, at *Weymouth*, *Studland*, and *Poole*; most probably dead and mutilated specimens.

It is a pelagic shell, and rarely taken in a recent state, but by dredging in deep water. We have found it on some of the shores of *South Devon*, particularly at *Torbay*; and have taken it not uncommonly by dredging at *Torcrofts*; and sometimes at *Salcomb*; but in no one instance alive, though occasionally perfect; yet always more or less covered with extraneous matter. From this it must be inferred, that they either inhabit the deeper parts beyond the reach of the dredge, or the more rocky situations which cannot be searched by the usual means.

- 4.
- Murex erinaceus. *Linn. Syst.* p.1276.—*Gmel. Syst.* p.3530. 19. ERINACEUS.
Lister Conch. t.942 f. 38?—*Gualt* t. 49 H.
Br. Zool t.76. f 95.—*Turt. Linn.* iv. p.432.
Don. Br. Shells. i. t. 35.
Pult. Cat. Dorset. p. 43.

Buccinum porcatum. *Da Costa.* p. 133. t. 8. f. 7. 7.

M. with a very rough, strong, angulated shell, of a dirty white, or brownish colour: with seven or eight rugose spires much produced, and terminating in a fine point: on each volution are six or seven rugged, prominent, longitudinal ribs, crossed by transverse, elevated striæ: the whole shell imbricated with small concave, or arched scales, very conspicuous on the body: aperture oval; canal tubular; outer lip thickened by a rib, inner margin dented; pillar lip smooth glossy-white. Length an inch and three-quarters, and nearly an inch wide.

In very young specimens the gutter or canal is open, and the whole shell is covered with elevated points, which being sometimes worn, gives it a pretty cancellated appearance, and in this state may readily be mistaken for a distinct species.

This is not uncommon on many of our shores; but the finest and most perfect specimens are taken by dredging; sometimes a pretty variety, mottled or zoned with ferruginous and white.



5.

PURPUREUS.
C. L. S. S.

M. with a very rugose shell, of a dark purple colour, with sometimes a few spots or blotches of white: volutions nine or ten, rounded, and tapering to an extremely fine, sharp point, furnished with nineteen or twenty ribs, running a little oblique to the right; crossed by numerous sharp, elevated ridges, which rise into angles upon the ribs, making

making the shell very rough, and giving it a cancellated appearance: aperture narrow, oval, terminating in a strait canal; outer lip thin; margin white, crenated by the striæ: *Columella* striated transversely oblique to the end of the canal, and somewhat tuberculated; inside purple, marked by the ribs. Length five-eighths of an inch; breadth a quarter of an inch.

This new, elegant, and rare species, we have taken a few of alive, by dredging in *Salcomb* bay, in *Devonshire*.

In all the specimens we have seen, the outer lip has been more or less white, with here and there a few obscure spots of the same colour, without regularity, on other parts of the shell.



6.

M with a rugose shell, of a light brown colour: voluti- LINEARIS.
 ons seven or eight, rounded, and strongly ribbed, crossed by Tab. 9. f. 4.
 elevated striæ or ridges, the summits of which are purplish-
 brown, and form fine, spiral, thread-like lines; all up the
 shell; these are, however, sometimes interrupted, as in
 some specimens a few of the ridges are plain brown: the
 shell tapers to a fine point, and is generally darkest at the
apex: in dead specimens that are bleached white, and
 have lost the lineated appearance, the *apex* is generally of
 a purple colour: the ribs are nine or ten in number:
 aperture oval, terminating in a strait canal; outer lip
 thickened at the back by a rib; margin within crenated;
 pillar

pillar lip smooth. Length exceeding a quarter of an inch; breadth one eighth.

This new and elegant species, we first discovered in sand from *Falmouth* harbour, and afterwards took several alive by dredging in *Salcomb* bay, in *Devonshire*; but is a rare shell in both places.

7.

MURICATUS.
Tab. 9. f. 2.

M. with a strong, rough shell, with six or seven ventricose, tuberculated volutions, tapering to a fine point: the tubercles are formed by interrupted, longitudinal ribs, crossed by strong, elevated striæ; and in some parts are pointed, or angulated: *apex* smooth: aperture oval, terminating in a long slender canal, which together, rather exceed the length of the rest of the shell; outer lip sharp, and dentated at the edge; margin within crenulated; pillar lip smooth. Length half an inch; breadth a quarter.

We procured a few of this new, and rare species, by dredging in *Salcomb* bay. It is generally covered with a thick orange-red *epidermis*, or extraneous matter, that obscures the markings; beneath which the shell is white, tinged with flesh-colour, and sometimes stained greenish.

8.

TURRICULA.
Tab. 9. f. 1.

M. with seven taper, ribbed spires, of a white colour, and somewhat glossy, terminating in a fine point, and striated transversely: the volutions are strongly defined, not rounded,

rounded, but rise perpendicular above each other, the top of each being almost flat; the ribs at that part angulated, or turrated, and suddenly decline to the separating line: aperture narrow-oblong, ending in a broad canal; outer lip a little thickened by a rib; upper part angulated; pillar lip smooth. Length three-quarters of an inch; breadth rather more than a quarter.

We are indebted to Mr. BOYS for our first acquaintance with this species, who informs us, it is not uncommon on the shore of *Sandwich* in *Kent*.

Have since found it at *Biddeford* bay, in *Devonshire*, and on the south coast of *Wales*, particularly about *Tenby* and *Laugharne*.



9.

M. with six taper ribbed spires, of a pale rufous-brown colour, and sometimes chestnut: the volutions are generally furnished with fifteen or sixteen small ribs, striated transversely: aperture narrow, oblong, ending in a short canal; outer lip smooth, rarely thickened by a rib; pillar lip smooth. Length three-tenths of an inch; breadth one eighth.

This species is found with the last at *Sandwich*, *Biddeford* bay, and on the coast of *Wales*: we have also taken it on the south coast of *Devon*, and in *Dorsetshire*, where the other has never occurred. It has indeed, somewhat
the

the habit of that shell, but is readily distinguished from it, by being rather more slender, not so large in the body volution, the spires a little rounded, not flat at the top, and the colour is never white; the ribs, too, are generally more in number.

We have taken it alive by dredging on the coast of *Devonshire*, of a dark purplish colour, probably its usual appearance in that state: as all those of a different colour from other places were dead shells, and deprived of much of their beauty.



10.

SINUOSUS.

Tab. 9. f. S.

M. with a strong, thick, white shell, with six costated volutions, tapering to a fine point: the spires are very little raised, and separated only by a fine thread-like line: the ribs are seven on each spire, strong, much elevated, and arched, but do not quite extend to the upper part of each: the whole shell is finely and regularly striated transversely, or across the ribs, and is most conspicuous in the depressions between them: aperture narrow, oblong-oval; canal short, and not much contracted; at the upper angle is a deep *sinus*; the outer lip is slightly thickened by a rib; inner lip replicated on the *Columella*. Length three-quarters of an inch; breadth a quarter.

We were favoured with this new, and rare species, by Mr. BRYER of *Weymouth*, who found it on the shore near that place. It is at once distinguished from all other *British* species,

species, by the singular *sinus* or gutter in the upper part of the outer lip.



- Buccinum costatum. *Da Costa* p. 128. t. 8. f. 4. 11.
 Murex costatus. *Br. Zool.* No. 100. t. 79? inner qua- COSTATUS.
 drangle upper left figure.
 Pult. Cat. Dorset. p. 43.
 Don Br. Shells. iii. t. 91.
 Murex truncatus. *Turt. Lin.* iv. p. 446.

M. with six taper volutions, furnished with eight or nine elevated ribs, destitute of any striae, and frequently glossy: colour various; some are wholly of a deep purplish-brown, or chocolate, or partly mixed with white; others yellowish-white, with fine spiral streaks of brown, that look like striae; and not unfrequently quite plain dull white, but such must be considered as dead, and injured shells: aperture narrow, terminating in a canal, very little more contracted than the rest of the mouth, and is nearly strait; outer lip usually thickened by a rib at the back, the margin thin; inner lip very little replicated. Length three-tenths of an inch at most; breadth one-eighth.

DA COSTA speaks of this species from *Cornwall* and *Devonshire*. We also found it in both those counties, particularly at *Falmouth* in the former; and at *Biddeford* bay, and *Salcomb* bay, in the latter; but only alive in the last place. It is likewise met with on some of the sandy shores of *South Wales*, especially about *Laugharne*.

Doct^r PULTENEY informs us, it is rare on the coast of *Dorset*; and Mr. PENNANT notes it from *Anglesea*.

Mr. BRYER favoured us with it from *Weymouth*.

It does not, however, appear to be plentiful any where; and is rarely procured in a recent state.



12.

ATTENUATUS.

Tab. 9. f. 6.

M. with an elegant, slender shell, with eight spires, regularly tapering to a very fine point, destitute of striæ, and furnished with nine equidistant, strong ribs: volutions scarcely raised, and separated only by a very fine line; the ribs are arched, or undulated, as they rise in the middle of each volution: aperture narrow, contracting a little at the canal, which is moderately long, and nearly strait: outer lip thickened at the back with a rib; inner lip plain. Length half an inch; breadth one-eighth, or rather more.

This shell, which we do not find described by any author, appears to be very rare, never having been able to procure more than three or four specimens; the first was in sand from *Falmouth* harbour, others from *Biddeford* bay, of an inferior size; all of which were of the same plain, yellowish-white colour, without striæ, or markings of any kind; one or two of which possessed a little gloss between the ribs.

It bears some resemblance to the *M. costatus*, but is
much

much more elegant in shape, more contracted in the aperture, and formed with a greater number of volutions.

In size it is nearly double that of the *costatus*, and is readily distinguished by its more slender form.



13.

M. with a slender shell, with nine or ten costated volutions, tapering to a fine point: the ribs are eleven or twelve in number crossed with numerous striæ: these ribs do not continue throughout the shell, but are separated at the juncture of each spire by a flat space, at which part the transverse striæ are uninterruptedly continued in a spiral direction up the shell, like fine threads; at the base of the body whirl, which is destitute of ribs, the transverse striæ are stronger and more distant: the ribs are very convex or arched, giving the volutions a tumid appearance: aperture narrow; canal moderately long, ascending; outer lip a little spread, margin arcuated; inner lip very slightly thickened. Length seven-eighths of an inch; breadth two-eighths.

GRACILIS.

Tab. 15. f. 5.

This new, and elegant species, was picked up on the sands of *Biddeford* bay in *Devonshire*, and is the only one we could procure: the colour is yellowish, inclining to pale ferruginous in the sutures, or divisions of the spires.



14.

Murex acuminatus. *Br. Zool.* t. 79? inner quadrangle lower right hand.

NEBULA.
Tab. 15. f. 6.*Turt. Lin.* iv. p. 446.

M m 2

M, with

M. with eight taper, costated spires, terminating in a sharp pointed *apex*, slightly, but elegantly reticulated, as if covered with fine gauze: the volutions are scarcely elevated between the ribs, and only separated by a fine thread-like line: aperture narrow, oblong-oval, ending in a canal turning a little to one side; outer lip sharp; inner lip replicate, smooth, glossy: colour various, sometimes yellowish-white, others pale purplish-brown, or rufous; but the most beautiful variety is of a blush-colour, with the decussated striæ white.

Worn shells, that have lost the fine striæ, might be confounded for the *M. costatus*, without proper attention: it is, however, in that state ascertained by the turn of the canal, by the aperture being much shorter and not so contracted, and by the superior number of ribs, which is ten or eleven, and those not so much elevated.

We have found this pretty shell at *Falmouth*; and on the north and south coasts of *Devonshire*, particularly *Biddesford* bay: and have received it from the south coast of *Wales*, where it is not uncommon about *Tenby* and *Laugharne*. Also from *Weymouth*. It is, however, by no means plentiful, and good specimens rare: the largest rather exceed half an inch in length; and two-tenths of an inch in breadth.



15.

SEPTANGULARIS M. with seven or eight, strong, smooth, taper volutions, terminating in a fine point, of a light purplish-brown colour
 Tab. 9. f. 5.

lour, and somewhat glossy; with seven longitudinal ridges, that run the whole length, scarcely interrupted by the separating line: the sides, or space between the ribs, are but little concave, which gives the shell a heptagonal appearance: aperture oblong-oval, ending in a short canal; outer lip sharp at the edge, thickened at the back by a ridge, the upper part contracted to an angle, where the margin is a little indented; pillar lip a little replicated. Length five-eighths of an inch; breadth two-eighths; but rarely so large.

Sometimes this shell is white at the junction of each volution; worn specimens are dull, opaque white.

We found this rare species first at *Falmouth*, and since alive in *Salcomb* bay, taken by dredging.

Have also received it, amongst some small shells, from Mr. BRYER, who found it at *Weymouth*.



- Murex fuscatus. *Lin. Syst.* p. 1225.
Gmel. Syst. p. 3562. 145.
Gualt. t. 56. H.
Lister Conch. t. 121. 17.
Pult. Cat. Dorset. p. 43.
Turt. Lin. iv. p. 458.
 Turbo-tuberculata. *Br. Zool.* t. 82. f. 111*?
Turt. Lin. iv. p. 494.

16.

FUSCATUS.

M. with

M. with ten or twelve tuberculated spires, of a yellowish-brown colour, tapering to a fine point; the volutions are curiously wrought, with three or four series of crenulated striæ between the tuberculated spiral ridges: aperture small, oval, ending in a slight canal: the base spirally striated.

The tubercles in large shells extend into strong conic spires, on the lower volution; and sometimes run together into a sharp spiral ridge, like a screw.

This very rare *British* shell has been found at *Weymouth* by Mr. BRYER; it was about an inch and a half in length, and half an inch broad at the base.

Mr. PENNANT's shell is of this size, and was found on the coast of *Northumberland*.

PETIVER has given the figure of a shell, very much like that in the *British Zoology*, but does not state it to be *English*. Vide PETIVER's *Gazophylacium Naturæ*, Tab. 5. f. 5.



17.

TUBERCULARIS. M. with nine or ten, slender, taper, tuberculated volutions, separated only by a slight depression: colour chestnut-brown: apex pointed; aperture small, oval, ending in a canal, somewhat enclosed by the *Columella* turning inward. Length a quarter of an inch.

We

We found this species, in drifted sand, at the mouth of the *Aun* in *Devonshire*, sparingly. It has also been picked up on the coast of *Sandwich*, by Mr. BOYS.



18.

- Turbo turritus perversus novem anfractibus punctatus aper- ADVERSUS.
tura coarctata. *Walk. Min. Shells.* f. 48.
Chem. Conch. ix. t. 113. f. 966 ?
- Turbo Punctatus. *Turt. Lin.* iv p. 501.
Adams Microsc. t. 14. f. 21.

M. with ten or eleven, reversed, tuberculated spires, tapering to a fine point: the volutions scarcely defined by the separating line, with three series of tubercles on each, the middle row smaller than the others: aperture oval, ending in a strait canal; base with two or three smooth, spiral ridges. Length three-eighths of an inch; sometimes, though rarely, half an inch; breadth not quite one-eighth. Colour opaque light brown.

This species has much the habit of the preceding, but is at once distinguished by the volutions turning the contrary way.

It differs also a little in the shape of the aperture and canal; and particularly, in the middle series of the tubercles being smaller.

We first received this shell from Mr. BOYS, for that of WALKER's above quoted; and have since found it sparingly on the *Cornish* and *Devonshire* coasts.

Strom-

RETICULATUS.

Strombiformis reticulatus. *Da Costa* p. 117.

Murex reticulatus. *Pult. Cat. Dorset.* p. 43.

Borlase Corn. p. 277.

M. with eleven or twelve, much reticulated volutions, of a rufous-brown colour; strong, slender, and tapering to a very fine point: on each volution are four spiral ridges, intersected by longitudinal furrows, running a little oblique, forming the whole surface equally reticulate: the separating line small, and not much depressed: aperture oval, angulated at the upper part, the lower end a little contracted into a slight canal, or gutter; outer lip thin, a little indented by the spiral ridge; pillar lip replicated; base not reticulated. Length five-eighths of an inch; rather more than one eighth broad.

This species is extremely common on some parts of the *Cornish* coast, particularly in the sand, dredged from *Falmouth* harbour for the purpose of manure: and frequently found adhering to ships cables in heaving the anchor.

It seems to grow more scarce eastward; though we have found the largest specimens in *Devonshire*. Is noticed by Doctor PULTENEY on the *Dorsetshire* coast: and has very rarely been taken at *Sandwich* in *Kent*. Have also met with it in *South Wales*.

A variety has one or two strong ribs crossing some of the volutions.

This

This shell may easily be discriminated from the *M. tubercularis* by the aperture, which is only a little contracted at the end, forming a sub-canal; whereas the other is a perfect slender tail, or gutter.



20.

Murex quinque anfractibus spiraliter striatis, costis remotis, MINUTISSIMUS; canali clauso. Lin. Trans. iii. p. 65. (Adams.)

Shell with five spiral striated whorls, and remote ribs: beak closed. *Turt. Lin. iv. p. 460.*

A minute, elegant, and pellucid shell, from the coast of *Pembrokeshire*.

GEN XXVI.

TROCHUS.

Animal a LIMAX.

SHELL, univalve, spiral, sub-conic.

Aperture, sub-tetragonal, in some angulated, in others rounded; transversely contracted.

Columella, oblique.

1:
ZIZIPHINI.

- Trochus ziziphinus*. *Lin. Syst.* p. 1231.—*Gmel. Syst.* p. 3579. 80.
Chem. Conch. v. t. 166. f. 1592. 1594.
Lister Conch. t. 616. f. 1.—*Id. Angl.* t. 3. f. 14.
Br. Zool. t. 80. f. 103.
Da Costa. p. 37. t. 3. f. 2. 2.
Borlase Corn. t. 28. f. 7.
Turt. Lin. iv. p. 472.
Pult. Cat. Dorset. p. 44.
Don. Br. Shells. ii. t. 52.

Trochus Conulus. *Br. Zool.* t. 80. f. 104.

T. with a conic shell, terminating in a very fine point, with seven or eight volutions, wrought with several spiral ridges;

ridges; the first of these in each volution is larger, and more prominent than the rest, and serves to mark their divisions: colour livid, or reddish; in some darker, and of a purplish hue, streaked with longitudinal, broad, wavy lines of a deeper shade, which are most distinct on the larger ridge, at the bottom of each volution: aperture somewhat compressed, angulated: inside nacreous: base flattish, with circular ridges, generally of a paler colour than the rest of the shell, and without spots; imperforated.

The upper volutions are frequently finely tuberculated, but not easily perceived by the naked eye.

It is a common species on many of our shores; plentiful about *Marazion* in *Cornwall*, and on the coast of *South Devon*; frequently found with *Turbo littoreus*, adhering to stones, between high and low-water mark. Length one inch; breadth at the base nearly the same.

Animal yellowish, mottled with reddish-brown; *tentacula* filiform, rufous-brown, paler beneath; eyes pedunculated; on each side the body above the *sustentaculum*, four very small filiform appendages on each side.

Trochus fragilis. *Pult. Cat. Dorset.* p. 44.

Trochus papillofus. *Da Costa,* p. 38. t. 3. f. 3?

Gualt. t. 61. G. M.

Trochus Granatum. *Gmel. Syst.* p. 3584?—*Turt. Lin.* iv. p. 476?

Chem. Conch. v. t. 170. f. 1654—5?

N n 2

T. with

2.

TENUIS.

Tab. 10. f. 3.

T. with a thin, fragile, conic shell: in shape and general appearance much like *T. ziziphinus*; but is readily distinguished by the fine granulated ridges that compose each volution, without the larger one at the base of each, so conspicuous in that shell. The aperture is not so much angulated; the base more rounded, and marked with numerous, small, reddish spots, never observed in the other species; the volutions too are more rounded; and the shell not so thick and strong: base imperforated: the *Columella* reflects a little, and forms a small ridge and depression in the place of an *umbilicus*: colour brown, with broad, longitudinal, deeper coloured stripes; sometimes flesh-coloured, with a few faint pink markings. Length an inch and a quarter; breadth rather less.

This species has probably been confounded with the *T. ziziphinus*, and may possibly be the variety of that shell described by LINNÆUS, in the *Museum Regiæ*, as being *tota pallida anfractibus basi gibbis, striatis, subtilissime punctis papillofis*.

DOCTOR PULTENEY, who favoured us with this shell, says it is found on the north shore at *Poole*, and at *Weymouth*.

DA COSTA's description answers in most respects; but his shell is stated to have a wide and deep cavity at the base, at the bottom of which a tortuous *umbilicus* is seen.

This, however, his figure does not in the least express; he adds also, that the inside is white, but not pearly: this
might

might be in a dead and worn specimen, but in recent shells that part is of a fine pearly hue. Possibly some variety of this species may be umbilicated, as in some specimens we have seen a strong inclination towards it. DA COSTA received his from *Cornwall*, but says, he never met with it from any other *British* coast.

Not *T. fragilis* of GMELIN; have therefore not adopted Doctor PULTENEY's name, which at the time of writing he had probably overlooked the circumstance of its being preoccupied for a different shell.



Trochus exiguus.	<i>Pult. Cat. Dorset.</i> p. 44.	3.
	<i>Lister. Conch.</i> t. 616. f. 2.	EXIGUUS.
Trochus exasperatus.	<i>Br. Zool.</i> No. 105.	
Trochus Conulus.	<i>Da. Costa.</i> p. 40. t. 2. f. 4. 4.	
	<i>Don. Br. Shells.</i> i. t. 8. f. 2.	
Trochus erythroleucos.	<i>Gmel. Syst.</i> p. 3581?	
	<i>Turt. Lin.</i> iv. p. 473?	
	<i>Chem. Conch.</i> v. t. 162. f. 1529. a. b.	

T. with a strong conic shell, with six volutions, terminating in a fine point; each volution wrought with four or five small, spiral, crenated ridges: the wreaths defined by a broad, and more elevated ridge, finely cut diagonally with striæ, or notches, that give it the appearance of twisted cord; the interstices between the ridges, are very finely striated in the same direction: colour various, cinereous-brown, or purplish: the larger ridge frequently red,
and

and sometimes spotted with white: the *apex* almost uniformly of a fine deep crimson: the base imperforated, marked with circular ridges: aperture angulated; inside white, not pearly. Length rarely three-eighths of an inch; breadth a quarter of an inch.

This is not the *T. Conulus* of LINNÆUS. It has much the habit of *T. ziziphinus*, but on comparison will be found perfectly distinct; that shell not possessing the fine crenulated ridges, so conspicuous in this species; is also more pyramidal than that shell; and most times readily distinguished by the crimson tip.

DA COSTA received it from the coast of *Devonshire*; and says that it is not uncommon on the *Suffex* coast.

DOCTOR MATON in his *Western Tour* says, he found it at *Treryn cove*, near the lands end, in *Cornwall*.

DOCTOR PULTENEY gives it as a *Dorset* shell, but speaks of it as rare. We have not been fortunate enough to find it either on the *Devon* or *Cornish* coasts, and consider it as a scarce shell in *England*, never having occurred to us, except on the shore between *Weymouth* and *Portland*.



4.
STRIATUS.

Trochus striatus. *Lin. Syst.* p. 1230.—*Gmel. Syst.* p. 3579. 78.
Pult. Cat. Dorset. p. 44.
Turt. Lin. iv. p. 471.—*Gualt.* t. 61. f. N.
Lister Conch. t. 621. f. 8.

Trochus

Trochus striatus. *Chem. Conch.* v. t. 162. f. 1527. 28.

Trochus parvus. *Da Costa* p. 41.

T. with a conic shell, tapering to a fine point: volutions six, flat, and scarcely defined by any separating line; each wrought with eight or nine fine spiral ridges, intersected by very small longitudinal striæ, most conspicuous in the larger volutions: colour cinereous, with interrupted, longitudinal, dark, purplish-brown lines; sometimes of a dull crimson or purplish hue, with darker lines of the same colour; the streaks in some are broad, in others narrow: aperture angulated; inside pearly, except at the margin of the lip: base flat, with fine circular ridges: imperforated. Size of the *exiguus*, and has much the habit of that shell, but is readily distinguished, not only by the colour, but by being broader at the base, and in wanting the large spiral ridge at the bottom of each volution; as well as the crimson tip. The pearly inside appears also another distinguishing character, as well as the superior number, and fineness of the ridges on each volution.

We have found this species plentiful amongst sand from *Falmouth* harbour; and not uncommon in *Devonshire*, particularly in one part of *Salcomb* bay, where we have taken them alive from the rocks at extraordinary low tides; but are seldom uncovered by the water. It is also found on the *Dorset* coast sparingly. Is not the *T. parvus* of Mr. ADAMS given in the *Linneæan Transactions*, vol. iii. t. 65. the young of this species?

Trochus

IGMIDUS.

Trochus Naffaviensis. *Chem. Conch.* v. t. 171. f. 1676 ?

Tab. 10. f. 4. 4.

T. with a strong, sub-conic, tumid shell, with five volutions, wrought with extremely fine, close-set, spiral striæ, interrupted only by a deep separating line; the volutions project considerably, but are not rounded: the point is small, but not taper; at the bottom of the body whirl is a sub-carinated edge: the base is a little rounded, and furnished with a small *umbilicus*, frequently decreasing with age, and sometimes almost closed in the larger shells: aperture sub-quadrangular, pearly within: colour principally cinereous-brown, sometimes with a yellowish cast, and rarely of a dark purplish-brown; all more or less streaked with fine, obscure, undulated lines, longitudinally: the purplish coloured specimens are sometimes spotted with white at the top of each volution. Length seldom more than a quarter of an inch, and never quite three-eighths; breadth usually more than its length. The outer coat of this shell is extremely thin, under which the mother of pearl, gives it a singular bronze appearance, in some particular points of view.

This may be considered by no means a plentiful species. We have hitherto only taken it alive, by dredging, in *Salcomb* bay, where it is frequently found adhering to stones and broken shells: dead ones are met with sometimes on other parts of the coast of *Devon*, particularly at *Torcross*, amongst *algæ* brought on shore by the seine, and other fishing nets; these are most times occupied by the smaller *Cancer Bernardus*.

Have

Have also received a single specimen from *Wales*, and another from *Kent*; and observed one in Mr. BRYER'S cabinet at *Weymouth*, found on that shore.

Animal pale; with a few dusky spots above at the posterior end, and a transverse streak of the same behind the lip: *tentacula* two, setaceous; eyes black, placed on pedicles behind the *tentacula*, and capable of turning about in various directions: on the sides of the posterior end are four slender appendages, originating from under the corneous *operculum*, which is fixed to that part.



Trochus crassus. *Pult. Cat. Dorset.* p. 44.

Trochus lineatus. *Id.* p. 44.

Turbo lineatus. *Da Costa* p. 100. t. 6. f. 7.

Don. Br. Shells. ii. t. 71.

Turt. Lin. iv. p. 480.

6.
CRASSUS.

T. with a strong, thick, sub-conic shell, with five rounded volutions, separated by a small depressed line: *apex* moderately pointed when perfect, but generally worn and decorticated: colour cinereous, or light brown, covered with fine, close-set, zigzag lines, of purplish-brown; and sometimes dark purplish-black: aperture rounded on the outer lip, angulated at bottom, furnished at that part with a blunt, tooth-like protuberance; outer lip acute, inner margin purplish; pillar lip smooth, white, not pearly; the white part extends almost across the base, and is a little flattened as if worn, but is an invariable character: in some a slight

O o

umbilicus,

umbilicus, others totally devoid of such a mark: inside pearly. Length an inch; breadth rather less.

This species varies a little in shape; some are more conic, and the volutions more round and tumid than others; but are always readily distinguished from any other of the genus by the tooth, and the flat white space at the base.

The outer coat is rather thick, but when removed, the whole shell except the *apex*, is of a beautiful mother of pearl.

DA COSTA, who first noticed this shell from *Cornwall*, *Devonshire*, *Dorsetshire*, *Caernarvonshire*; *Hampshire*, and *Norfolk*, has placed it in the *Turbo* genus, from the sub-orbicular shape of the mouth. It is, however, sufficiently angulated to rank it amongst the *Trochi*.

We have found it plentiful in many of the places mentioned by DA COSTA, particularly on the rocks at *Marazion* in *Cornwall*, not unfrequent near *Falmouth*, and very common on many parts of the coast of *South Devon*.

It is always found adhering to rocks, or loose stones, and seldom below mid-tide.

Doctor PULTENEY sent us the young of this shell, rather more than half grown, for his *Trochus lineatus*.

Animal dusky-cinereous, frequently speckled with white, with two long, slender, pale *tentacula*, streaked transversely,

ly, or annulated with black: eyes at the base of the *tentacula* behind, placed on short, broad pedicles: margin of the body, above the *sustentaculum*, furnished with a scalloped, fin-like membrane; beneath which, on each side, are three long filiform appendages annulated with black, that are continually in motion: behind the left eye is a sort of plume, composed of several simple contiguous fibres.



Trochus Magus. *Lin. Syst.* p. 1228.—*Gmel. Syst.* p. 3567. 7. MAGUS.
Lijter Conch. t. 640. f. 32?
Chem. Conch. v. t. 171. f. 1656 to 1660.
Br. Zool. t. 80. f. 107.—*Turt. Lin.* iv. p. 462.
Pult. Cat. Dorset. p. 44.
Don. Br. Shells. i. t. 8. f. 1.

Trochus tuberculatus. *Da Costa.* p. 44. t. 3. f. 1. 1.

T. with five or six, tumid, but rather depressed volutions, marked by a deep separating line, and terminating in a very fine point: the volutions are wrought with fine spiral ridges, or striæ, and the upper part of each undated, or tuberculated, most conspicuous in the two largest: colour various, but most times white, or blush, elegantly marked with undulated stripes and blotches of crimson, purple, or chefnut-brown; and sometimes prettily spotted all over with pink: aperture compressed, angulated: *umbilicus* large and deep. Size, usually about an inch diameter at the base, and three-quarters of an inch high; sometimes, though rarely, an inch and a half broad.

The young of this species is frequently of a plain, light-brown colour, strongly marked with close-set, longitudinal striæ between the ridges: the base projecting into a sub-carinated edge, above which the sulcus is crenated.

It is not uncommon on many of our shores; very plentiful at *Falmouth*, amongst the sand from the harbour, of an extraordinary size; but mostly worn, and mutilated.

We have taken it alive, by dredging, in *Salcomb* bay, and other parts of *Devonshire*; but is rarely found in that state above the lowest water-mark.

Animal with two moderately long, fetaceous *tentacula*, annulated with black; behind which, at the base, are placed the eyes on peduncles: upper lip ciliated: the sides of the body furnished with several filiform appendages.



S
CINERARIUS.

- Trochus cinerarius*. *Lin. Syst.* p.1229.—*Gmel Syst.* p.3568.12.
Lister Conch. t. 641. f. 31.—*Id Angl.* t. 3.
 f. 15?
Chem. Conch. v. t. 171. f. 1681? f. 1686.
Br. Zool. No.106.*—*Turt. Lin.* iv. p 463.
Don. Br. Shells. iii. t. 74. two upper and
 two lower figures.
Trochus lineatus. *Da Costa.* p. 43. t. 3. f. 6. 6.

T. with a conic, spirally striated shell, not quite regularly taper, but terminating in a small produced *apex*: the
 volutions

volutions are not much raised, but separated by a fine line: colour cinereous, marked with fine, approximate, undulated lines of brown; sometimes of a purplish hue, that cover the whole shell in a longitudinal direction: aperture angulated; *umbilicus* small, but deep. Size at the base five-eighths of an inch diameter; height the same. Young shells are more flattened, or at least are broader in proportion to their height; but the *apex* is always produced and pointed.

This is a very common species on most of our shores, but has frequently been confounded with the next, though so essentially different.

DoctOR PULTENEY has certainly fallen into this error, in making the *T. cinerarius* of PENNANT, and the *umbilicalis* and *cinereus* of DA COSTA the same.

Animal very like that of the *T. crassus*, but paler; *tentacula* and *cirri*, or feelers on the sides of the body, rather less annulated, the former in some points of view appear slightly ciliated: on the forehead a scalloped membrane divided in the middle. In a very pretty drawing executed by Mr. HENRY BOYS, we perceive four slender filaments on one side of the body and three on the other; but in all those we have examined there were only three on each side; and were destitute of the plume, observable in the animal of *T. crassus*. It is probable these *cirri* on the sides may belong to the whole of this genus.

Trochus

UMBILICATUS.

Trochus umbilicaris. *Br. Zool.* t. 80. f. 106.

Lifter. Conch. t. 640. f. 29?

Chem. Conch. v. t. 171. f. 1685.

Trochus umbilicalis. *Da. Costa.* p. 46. t. 3. f. 4. 4.

Trochus cinerarius. *Pult. Cat. Dorset.* p. 44.

Don. Br. Shells. iii. t. 74. three middle figures.

T. with a strong, flattish shell, rounded at the top; the *apex* depressed, and not pointed: the volutions are five, nearly even, defined only by a fine, thread-like line, and wrought with nearly obsolete spiral striæ: colour white, or greenish, marked with longitudinal, waved, or zigzag lines of a light or dark purple: aperture compressed, angulated: *umbilicus* large, and perforated to the *apex*. Diameter, at the base, three-quarters of an inch; height not five-eighths of an inch. Young shells are extremely flat; those of three-eighths of an inch at the base, scarce rise in height one eighth.

No two shells seem to have puzzled conchologists more than this and the preceding, and even the later authors have heaped confusion upon confusion; some have made them the same, others have reversed their trivial names, or multiplied them into three distinct species, from some accidental markings. Mr. PENNANT, though very concise, seems to have defined the distinction pretty well; but has erred in marking this shell the *umbilicaris* of LINNÆUS; that species is very different, and not found in *England*.

Upon

Upon a strict examination of a great variety of both these species, we are astonished they could ever have been confounded. This shell is invariably more rounded at the top, more compressed or flattened, and the *apex* more depressed; and, what is remarkable, the *apex* is so thinly covered, that it is usually worn, and the *Columella* becomes pervious; so that if a small pin is introduced at the *umbilicus* the point may be felt at the *apex*.

In the colour they are essentially, and invariably different; the streaks of this are always broader, and of a much finer colour; whereas the *cinerarius* is constantly of a dull cinereous, with the streaks so fine and regularly disposed, as to make the shell appear longitudinally striated.

Animal much like that of *T. cinerarius*, but darker and more strongly marked with black annulations on the *tentacula*, and lateral *cirri*: eyes pedunculated the same, and situated behind or rather on the outside of the *tentacula*.



Trochus terrestris. *Br. Zool.* t. 80. f. 108.

Don. Br. Shells. iv. t. 111.

Chem. Conch. ix. t. 122. f. 1045. a. b. c.

Lister Conch. t. 61. f. 58.

Favan. t. 64. O. 1.3.— *Turt. Lin.* iv. p. 471.

Petiver Gaz. t. 22. f. 10.

Trochilus exiguus quatuor spirarum elegantissime striatus. *Morton Northamp.* p. 416.

Trochilus terrestris Mortoni *Da Costa.* p. 36.

Trochus terrestris tertius. *Id.* p. 36.

10.

TERRESTRIS.

T. with

T. with a thin, conic shell, of a livid-white colour, with five or six volutions nearly flat, finely striated longitudinally, divided by a very small depressed line, and a prominent ridge at the base of each: *apex* produced, but not very pointed: aperture much compressed, angulated: base flat, striated from the centre: umbilicated: round the base a strong carinated edge. Diameter rather more than a quarter of an inch; height not quite so much.

There can be little doubt but this is the same as that found by MORTON in *Northamptonshire*, and afterwards by Mr. HUDSON in the mountains of *Cumberland*, communicated to Mr. PENNANT. DA COSTA does not appear to have been acquainted with this shell, but has taken his description from the authors above quoted. He also gives another species, which he calls *Trochus terrestris Listeri*, and quotes LISTER'S *Anglica*, MORTON'S *Northampton*, and the *Philosophical Transactions*. This we are inclined to think is our *Helix trochiformis*.

The *Trochus terrestris* is the only true land shell of that genus found in *England*, and may be considered as very rare. It may not however be improper to remark in this place, that many of the long *Turbines* may readily be mistaken for *Trochi* in their infant state, when only three or four volutions are formed; the base of which is generally flat, and the aperture transversely compressed.

Such we have frequently received from our friends for new species of *Trochi*; in particular the *Turbo Muscorum*.

Trochus

Trochus fuscus. *Turt. Lin.* iv. p. 471.

Fuscus.

Adams Microsc. t. 14. f. 24.

Trochus umbilicatus quinque anfractibus marginatus apertura subrotunda. *Walk. Min. Shells.* f. 58.

The five-spined, umbilicated, marginated top shell, with a roundish aperture.

The colour opaque-brown. From *Sandwich*; common.

Not being acquainted with this species, we have been obliged to copy Mr. WALKER's description. The figure given is about the size of our *T. tumidus*; possibly a variety of that species, unless a small figure was forgot to be given.



Trochus cinereus. *Da Costa.* p. 42. t. iii. f. 5. 5.

CINEREUS.

This species, which DA COSTA speaks of as common in *Suffex, Effex, Cornwall, Cheshire, Northumberland*, and in the *Orknies*, we have never been fortunate enough to identify; possibly it is only a variety either of the *T. cinerarius*, or *T. umbilicatus*.

DoctOR PULTENEY considered it as a variety of the former: but, notwithstanding, we think it right to give it a separate place, on account of some characters which must create a doubt of its being either of those shells.

It is thus described: "The shell is thick and strong, of

P p

the

the size of a cherry, shape obtusely pyramidal, or not quite tapering to a point.

The base is very concave, with some circular furrows; the mouth roundish and capacious, within fine mother of pearl; the outer lip smooth and even: the inner, or pillar lip, has two jags or slight teeth, and two furrows crossing it transversely: from hence it widens, runs oblique, and forms a spacious cavity, at the bottom of which lies the *umbilicus*, deep, cylindric, and so hollow as to admit the head of a large pin. All this part is of a dark ash, greatly variegated with blackish lines or streaks, which run lengthways and across: but the beginning of the *umbilicus* is generally pearly, and of a fine light greenish colour. The body and turban have five bellied, or swelled, wreaths or whirls, separated by a very depressed line; they are circularly striated, but faintly, and the colours are exactly the same as on the base.

The outer coat being taken off, the whole shell is fine mother of pearl.

DA COSTA has quoted WALLACE, LISTER'S *Conchology*, DALE, and WALLIS, but we can find nothing that throws more light upon the subject.

The structure of the aperture certainly indicates a distinct species, as none of the *British Trochi* possess any thing like two teeth, as a permanent character; at the
same

same time, so common a shell as it is described to be, can hardly be supposed to escape the notice of conchologists of the present day.

We must, therefore, either conclude *DA COSTA* was deceived with respect to its being common; that it is only a variety of one of the more plentiful species; or suspect that the shell in question is foreign, as is the figure quoted in *LISTER*, tab. 633.

END OF PART I.

TESTACEA BRITANNICA

OR

Natural History

OF

BRITISH SHELLS,

MARINE, LAND, and FRESH-WATER,

including the most minute: systematically arranged and

EMBELLISHED with FIGURES,

BY

GEORGE MONTAGU, F.L.S.

*These are thy glorious works, thou source of good,
How duly seen, how purely understood!*

Cowper.

Part 2

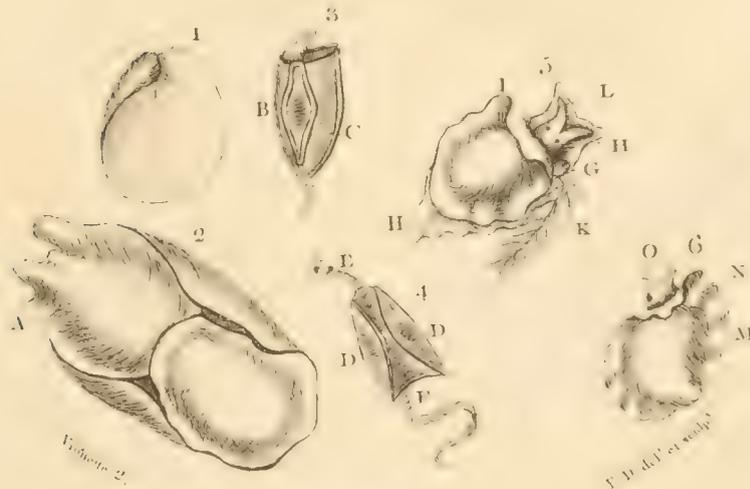


Figure 2.

Fig. 5. et seq.

TESTACEA BRITANNICA :

OR,

BRITISH SHELLS.

PART II.

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GEN. XXVII.

TURBO.

Animal a LIMAX.

SHELL, univalve, spiral.

Aperture, contracted, orbicular, entire.

*MARINE.†

1.

- Turbo Terebra. *Lin. Syst.* p. 1239.—*Gmel. Syst.* p. 3608. TEREBRA.
Martini Conch. iv. t. 151. f. 1415. to 1419.
Lister Conch. t. 590. f. 55?—t. 591. f. 57.
Id. Angl. t. 3. f. 8.
Br. Zool. t. 81. f. 113.
Don. Br. Shells. i. t. 22. f. 2.
Turt. Lin. iv. p. 497.
 Strombif. Terebra. *Da Costa.* p. 112. t. 7. f. 5. 6.
 Turbo unguinus. *Pult. Cat. Dorset.* p. 45.

T. with

† It was not thought requisite in a partial work, to follow the *Linnean* subdivisions in each genus; we have therefore divided this genus into Marine and Land: to the last are added all the fresh-water shells, and the reversed, or *heterostrophe* species, are brought together at the end, for the facility of comparison.

T. of a long, taper shape, with from twelve to fifteen volutions, terminating in a very fine point; the larger whirls are somewhat rounded, the smaller ones less distinct, marked with many fine, spiral striæ, or sharp elevated ridges: colour light-brown, sometimes rufous-brown: aperture orbicular; outer lip thin, fragile, and semi-pelucid. Length generally about an inch and a half, sometimes two inches; breadth at the base five-eighths of an inch.

Worn shells, that have lost the outer coat, are frequently marked with streaks of chestnut-brown, or with an interrupted spiral belt. This species is not uncommon on some of our shores, but mostly mutilated. We once found it alive, in great abundance, adhering to *algæ*, thrown up at *Dawlish* in *Devonshire*, after a severe storm: and have dredged it up from *Salcomb* bay, and other parts of the same coast.

Doct^r PULTENEY considered this as the *T. unguinus* of LINNÆUS, and not the *Terebra*. GMELIN, however, quotes MARTINI's figures, which are certainly this shell; and does not quote any author for the *unguinus* but MULLER.

Possibly both these shells are mere varieties, with the spiral ridges more or less numerous and prominent.

Animal yellowish, striped with dusky: *tentacula* two, short, with the eyes placed at their base.

Strombif.

- Strombif. cinctus. *Da Costa*. p. 114. t. 7. f. 8.
Martini. Conch. iv. t. 152. f. 1423.
Lister Conch. t. 592. f. 60.
 Turbo cinctus. *Don. Br. Shells.* i. t. 22. f. 1.
 Turbo variegatus. *Lin. Syst.* p. 1240?—*Gmel. Syst.* p. 3608?
 Turbo exoletus. *Turt. Lin.* iv. p. 496.

T. of a long taper shape, with twelve or fourteen volutions, rather raised, and separated by a deep depression; wrought with obsolete spiral striæ, with two strong, elevated ridges in the middle of each volution: colour white, or purplish, marbled and variegated with chefnut, generally in longitudinal, undulated streaks; *apex* sharp pointed: aperture orbicular. Length two inches and a half; breadth at the base, five-eighths of an inch.

This is a much stronger shell than the preceding species, and is at once distinguished by the two remarkable, elevated ridges. DA COSTA received it from the coast of *Lincolnshire*, and *Lancashire*, and suspected it to be the *T. exoletus* of LINNÆUS. MARTINI'S figure above quoted, expresses the shell pretty well, and which GMELIN has referred to for the *T. variegatus*. DOCTOR TURTON has considered it the *exoletus* by his quotations.

This is certainly a very rare species on the *English* coast.

We have received it from *Sandwich* in *Kent*.

This and the preceding species are the two most perfectly turritted shells of the larger species found in *England*;

land; for we cannot consider *Turbo duplicatus* of LINNÆUS, at present, as properly belonging to the shells of Great Britain.

LISTER had no better authority for placing it in his *Anim. Angliæ* tab. 3. fig. 7. than that he bought it of a fisherman at Scarborough. On the same ground PENNANT admitted it into the *Br. Zoology*, fig. 112. DA COSTA did the like, under the title of *Strombiformis bicarinatus*, tab. 6. f. 3. DONOVAN, following these examples, has figured it in his *Br. Shells*, tab. 102. Well aware from experience, that the simple authority of a fisherman is not sufficient to stamp its validity, we have omitted it in our catalogue, thoroughly believing it never has been found on the *British* coast. Is generally supposed to be an oriental species.



3.

CLATHRUS.

- Turbo Clathrus. *Lin. Syst.* p. 1237.—*Gmcl. Syst.* p. 3603-63.
Borlase Corn. t. 28. f. 9.
Lister Conch. t. 588. f. 51.
Martini Conch. iv. t. 153. f. 1434. to 1438.
Br. Zool. t. 81. f. 111. 111. A.
Pult. Cat. Dorset. p. 45.
Don. Br. Shells. i. t. 28.
Turt. Lin. iv. p. 493.
Strombif. clathratus. *Da Costa.* p. 115. t. 7. f. 11.

T. with from nine to twelve taper spires, terminating in a fine point; the volutions extremely rounded, separated by a deep depression, and regularly barred the whole length

length of the shell, with from nine to twelve regular, and distant, high, membranaceous ribs, running a little oblique: aperture orbicular, margin thickened by a rib that furrounds it: colour white, sometimes with a few brown markings. Length an inch and an half; breadth at the base half an inch. Exotic specimens are frequently larger, and have the ribs and markings stronger.

This elegant species, which much resembles that once costly and much coveted shell, the *Wentle-trap*, is found on several parts of our coast, but no where plentiful. We have taken it at *Falmouth* in *Cornwall*, and on the shores of *South Devon*; but seldom perfect, except small ones.

Young recent specimens are beautifully white, and polished between the ribs.

DA COSTA speaks of it as plentiful on the eastern coasts of *Wales*, and in *Scotland*. Is also found in *Dorsetshire* and *Kent*.



4.

Turbo clathratus sex anfractibus apertura ovali marginata. CLATHRATULUS
Walk. Min. Shells. f. 45.

Turbo Clathratulus. *Turt. Lin. iv. p. 500.*

Adams Microsc. t. 14. f. 19.

This species originally described by Mr. WALKER, differs in nothing from the preceding; except in size, and in the number of volutions, and ribs. We were first fa-

Q q

voured

voured with a specimen of this shell from Mr. BOYS, with reference to the figure in *Tesla minuta rariora*: have since found it on the coast of *South Devon* sparingly; and have received it from Mr. BRYER of *Weymouth*, as a shell of that shore.

It has generally five or six volutions, and the ribs are about fifteen in number, placed nearer together, and the shell rather more slender than the *T. Clathrus*, of the same size: there is, however, so much similitude, that doubts must be entertained whether they are really distinct, especially as the number of ribs in that shell is apt to vary; nor does there appear any essential difference in the aperture, although Mr. WALKER calls it oval.



5.

ELEGANTISSI-
MUS.

Turbo turritus novem anfractibus striatis apertura rotunda.
Walk. Min. Shells. f. 39.

Tab. 10. f. 2.

T. with from nine to thirteen flat spires, well defined by the separating line; long, taper, and terminating in a fine point; the volutions are cut longitudinally into regular, equidistant furrows, the whole length of the shell, scarcely interrupted by the separating line, and run a little oblique to the right; the *fulci* are moderately deep, but not so broad as the elevated ridges: aperture sub-orbicular, a little angulated at the upper and lower parts; inner lip somewhat reflected: colour glossy, semi-pellucid, white. Length commonly a quarter of an inch, rarely three-eighths; breadth not a fourth part of its length. A
remark-

remarkable character of this shell is, that the extreme spire turns perpendicularly upward, and then downward on the volution beneath, making half a lateral turn.

Mr. WALKER, who speaks of this species as very rare at *Sandwich*, could only have taken his description from small and worn specimens, as he states it to have but nine spires, and to be opaque. In that state we received it from Mr. BOYS for the shell above quoted. We have found it not uncommon in sand from *Falmouth* harbour; and more rarely on the coast of *Devon*, but have obtained it alive from *Salcomb* bay in the south, and from *Ilfracomb* in the north: in this state it is covered with a brown *epidermis*, which obscures the beauty of the shell.



6.

T. with nine extremely slender, smooth, pellucid-white spires, terminating in a fine point: the volutions greatly raised and much rounded, separated by a deep depression: aperture sub-orbicular; inner lip a little reflected. Length one eighth of an inch. NITIDISSIMUS. Tab. 12. f. 1.

We found this species in sand from *Falmouth* harbour, very rare.



7.

Turbo turritus septem anfractibus frigatis apertura ovali. UNICUS.

Walk. Min. Shells f. 40.

Tab. 12. f. 2.

Turbo albidus. *Turt. Lin.* iv. p. 500.

Adams Microsc. t. 14. f. 17.

Q q 2

T. with

T. with nine slender, glossy, pellucid-white spires, terminating in a fine point; the volutions rounded, separated by a deep depression, and wrought with fine longitudinal ridges, or striae, somewhat undulated; the intermediate spaces with extremely fine transverse striae, scarce perceptible, except greatly magnified: aperture sub-orbicular, inclining to oval. Length two-tenths of an inch.

This, and the preceding species, are the most slender shells hitherto known: found with it, and equally rare.

One we received from Mr. BOYS, for WALKER'S shell as above quoted, was not near so long, and was opaque as described by that author.

8.



SUBTRUNCATUS
Tab. 10. f. 1.

T. with six or seven rounded smooth spires, separated by a deep depressed line, gradually tapering to an obtuse point: aperture sub-orbicular, inclining to oval: colour pellucid yellowish-white. Length two-tenths of an inch; breadth about one fourth its length. Some of this species are a little glossy, and faintly striated longitudinally.

We found this on the shore at *Southampton*, and in sand from *Salcomb*.

9.



TRUNCATUS.
Tab. 10. f. 7.

Helix Truncatula. *Gmel Syst.* p. 3659?
Turbo nitidus. *Lin. Trans.* iii. p. 65. (*Adams.*)
Turt. Lin. iv. p. 487.

T. with

T. with a cylindric, smooth, glossy, pellucid, horn-coloured shell, with four spires: *apex* abrupt, as if mutilated: the volutions considerably raised, and divided by a deep depressed line: aperture sub-orbicular, slightly margined, reflecting a little on the pillar lip. Dead specimens are opaque yellowish white; and a rare variety is longitudinally striated, or marked with *crenulæ* in the *furcures*, or spiral divisions.

We found this singular species, not uncommon, on the shore at *Southampton*, at *Plymouth*, and other parts of the *Devonshire* coast sparingly: have also received it from Mr. BRYER of *Weymouth*.

The number of volutions are almost invariably the same, one instance only occurred which had five; the shape of this shell was rather more slender. Length usually two-tenths of an inch; breadth one third its length.



10.

- Turbo littoreus. *Lin. Syst.* p. 1252.—*Gmel. Syst.* p. 3588. 3. LITTOREUS.
Chem. Conch. v. t. 185. f. 1852. 1. 2. 3. 4. 5.
 • 6. 7. 8.—*Br. Zool.* t. 81. f. 109.
Litt. Conch. t. 535. f. 43.—*Id. Angl.* t. 3. f. 9.
Da Costa. p. 98. t. 6. f. 1. 1.
Pult. Cat. Dorset. p. 45.—*Turt. Lin.* iv. p. 480.
Don. Br. Shells. i. t. 33. f. 1. 2.
 Turbo obtufatus. *Lin. Syst.* p. 1232?—*Gmel. Syst.* p. 3588. 1?
Pult. Cat. Dorset. p. 45.
 Painted Turbo. *Walk. Min. Shells.* f. 31.

T. with

T. with a very strong, sub-oval shell: the first volution large, the others, which are four or five, are small and nearly flat, separated only by a fine line: aperture sub-orbicular; outer lip thin; inner lip thick and strong. Length frequently an inch. Full grown shells are usually smooth, of a uniform brown colour: younger ones are often fasciated with broad, white, or purplish-brown bands, marked with fine spiral striæ, and have the *apex* more acute than in adults.

This species is so various in shape and markings in its infant state, that it has frequently been mistaken for a different shell: and we suspect a variety is the *T. obtusatus* of LINNÆUS, figured in CHEMNITZ vol. v. t. 185. a. b. c. d. e. f. Such are not uncommon on our shores: the striæ on some are numerous and small; others deeply sulcated; and the ridges sharp, and a little reflexed: some marked with narrow *fasciæ*, others with one white band only on the body. Frequently found of an orange-yellow, finely striated all over; the upper volutions scarce distinguishable from the striæ, and sometimes of a different colour.

A variety elegantly chequered with brown and white; (more rare) is also figured by CHEMNITZ.

The *littoreus*, usually known by the name of *Periwinkle*, is frequently taken and sold by measure in many of our sea-port towns.

Animal striped with black: *tentacula* two, setaceous,
not

not quite round, annulated, or streaked transversely with black : eyes at the base of the *tentacula*, prominent.



11.

T. with a strong, short, conic shell, nearly as broad as TENEBROSUS. it is long; of a dark chocolate-brown, with five, rather ventricose, spires: the lower volution occupies half the length of the shell: *apex* obtusely pointed: aperture sub-orbicular; outer lip thin, except at the lower angle, where it spreads a little, and from thence continues to thicken on the pillar lip; inside very dark purplish-brown. Diameter a quarter of an inch.

This littoreal species, is found on the mud, and on rocks near high-water mark, and even in ditches subject to the daily flux of the tide.

We had for a long time considered this shell a variety of the young *T. littoreus*, or *T. rudis*; but late observations have inclined us to think it distinct; it is therefore given a separate place, but not without some doubt.

It is by no means so common, having at present only found it in one or two places on the coast of *Devonshire*, and once obtained it from *Kent*: and have observed, where it was most plentiful, no *littoreus* or *rudis* occurred. The colour is invariably darker than either of those shells, and without markings of any kind: it is faintly wrinkled across the spires, but rarely spirally striated as in the young *littoreus*,

torcus, and that in an obsolete manner; add to this, the strength of the shell seems to indicate its being formed and full grown: besides it is to be remarked, that no intermediate sizes are to be found of the same colour and shape, except from the tenth of an inch to one quarter.

We must however remark, that some of these littoreal shells are by no means easily ascertained in the *pullus* or fry state; and, indeed, some of them in the more advanced stages are not readily identified.

The aperture of this shell is guarded with a corneous *operculum*, like that of the *littoreus*.

When we consider the vast variety the *T. littoreus* is subject to in different stages of growth, it is but right to acknowledge, that there is no small difficulty in determining what are really belonging to that species, amongst the littoreal shells of our coasts; the shades and gradations are so intimately blended, that it is scarce possible to determine what marks a characteristic line of division.



12.
RUDIS.

Turbo rudis. *Don. Br. Shells.* i. t. 33. f. 3.
Turt. Lin. iv. p. 480.
Chem. Conch. v. t. 185. f. 1853.

T. with a thick, strong shell, with five ventricose volutions, well defined by a separating line; and sometimes faintly marked with spiral striæ, most conspicuous at the
base :

apex rather pointed: aperture sub-orbicular; inner lip thick, a little reflected, and sometimes in old shells forms a small depression; or *sub-umbilicus*: colour dirty yellow-white, or brown. Length three-quarters of an inch; breadth rather less.

Very young shells are of a deep-brown colour, but in every other respect the same; except being proportionably more slender.

This species, which no doubt has been confounded with *T. littoreus*, is at once discriminated by the round tumid volutions, in all its various stages of growth. It is not so common as that shell, but is found plentiful on the shores about *Falmouth*, especially under *Pendennis Castle*, adhering to the rocks. We have also found it at *Plymouth*, and other parts of the *Devonshire* coast; but rarely above half an inch in length.

Animal yellowish, without spots or stripes, with two setaceous *tentacula* of the same colour, most commonly marked with a longitudinal dusky streak on the outside.

The invariable difference in the colour of the animals of this and the *littoreus*, is a strong characteristic distinction. In the *operculum* they also differ; this is more round and more strongly spirally striated; but both are equally corneous, and permanent.

We have lately been favoured with some notes taken

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by

by Mr. HENRY BOYS of *Sandwich*, accompanied with many elegant drawings of various subjects in natural history; amongst which is a very good figure of this shell, with the following remarks:

“Has much the habits of *Turbo littoreus*, and the varieties of both shells run much into one another; it differs however in the distinctness of the whirls, in the colour being generally yellow, being a smaller shell, and in being viviparous; besides, the two shells are seldom found together; on the spot where this *Turbo* is found there are not any of the *T. littoreus*, though the latter are abundant in the neighbourhood. On stones between high and low water-mark at *Whitstable*, on the *Hearn* side of the copperas works.”



13.

STRIATULUS.
Tab. 10. f. 5.

Turbo striatulus. *Lin. Syst.* p. 1238.—*Gmel. Syst.* p. 3604. 67.

Turt. Lin. iv. p. 494.

Turbo carinatus. *Da Costa*, p. 102. t. 8. f. 10.

T. with four or five volutions, each terminating in a flat top, which marks their divisions; the base is wrought with fine spiral striæ, which towards the upper part rise into three distant, elevated, membranaceous ridges, continuing throughout the superior volutions; but become faint towards the *apex*: the furrows are deep and rounded at the bottom: it is strongly striated longitudinally from top to base; but most conspicuous in the furrows, being a little interrupted by the ridges, yet giving

ing it a pretty cancellated appearance, particularly on the lower part of the body whirl: *apex* not very pointed: aperture sub-orbicular, angulated at the upper part, and margined. Length two-tenths of an inch; breadth not quite so much. It is rather a strong shell for its size; when recent is sub-pellucid white: dead shells are opaque. Is a very rare species, and when perfect, is a most elegant and curious shell.

DA COSTA is the only author who has given it as an *English* species: he received it from *Cornwall*. We have also found it in sand from *Falmouth* harbour, and on the coast of *South Devon*; but very rare in both places.

LINNÆUS says it is a *Mediterranean* shell.



14.

T. with a smooth, conic shell, with six rounded volu-
 tions, of a sub-pellucid, rufous horn-colour: the lower
 spire marked with four, and sometimes five, purplish-
 brown, or chestnut coloured bands, with a broad space
 between the three lower and the upper ones; in the second
 and third spires are only two bands: the *apex* is small,
 but not very pointed: aperture sub-orbicular; outer lip
 very thin; inner lip thick, white, furnished with a nar-
 row channel, which terminates in a small *umbilicus*.
 Length rather more than three-eighths of an inch.

This species is subject to some variety: sometimes it

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is

is of a light horn-colour, and the bands faint; others are quite plain, and might be mistaken for *Turbo canalis*, was it not for the mouth of that shell being sub-angulated, and the pillar lip with a much larger canal, and *umbilicus*. It also bears some resemblance to *Turbo quadrifasciatus*, but is vastly larger, not near so thick and strong, and is destitute of the sub-carinated edge at the base.

We discovered this shell alive in *Salcomb* bay, at low water-mark, adhering to *algæ*; some are of a greenish colour between the bands; and when examined under a magnifying glass, appear in some lights to be finely reticulated.



15.
AURICULARIS.

T. with a conic, smooth, sub-pellucid, light horn-coloured shell: volutions five, much rounded, and deeply divided by the separating line: *apex* moderately pointed, and usually of a darker colour: aperture sub-oval, or rather ear-shaped; outer lip thin; inner lip much reflexed upon the body, forming an angle about the middle, behind which is a narrow *umbilicus*. Length three-eighths of an inch; breadth not quite two-eighths.

This somewhat resembles *Helix fossaria*, but besides being a marine shell, is essentially different in the mouth. Is a rare species, never having found it any where but on the shore near *Southampton*, and there not common.

T. with

T. with a conic, pellucid, horn-coloured shell, with CANALIS. five smooth, rounded volutions, the lower one large in Tab. 12. f. 11. proportion to the rest : *apex* pointed : aperture sub-orbicular, sub-angulated ; outer lip extremely thin ; pillar lip broad, white, furnished with a channel or groove, terminating in an *umbilicus*.

This species has somewhat the habit of *Helix tentaculata*, but is at once discriminated by the aperture, and groove on the *Columella* ; is also a marine shell. It rarely exceeds three eighths of an inch in length, and a quarter in breadth. We found this only on the shore near *Southampton*, where it is plentiful : and with it what must be considered a variety, with two brown bands on the body ; in every other respect the same : such however is rare.



Turbo lævis quinque anfractibus apertura sub-rotunda mar. CRASSIOR. ginata. *Walk. Min. Shells. f. 24.*

T. with a strong, thick, opaque, yellowish-white, conic shell, with five rounded volutions, divided by a deep depression, and terminating in a fine point : aperture sub-orbicular ; pillar lip wrinkled, that and the inside white. Length half an inch ; breadth a quarter. Live shells are covered with a thin, light yellowish-brown *epidermis*, beneath which a few obsolete *striæ* are observed in a spiral direction on the body whirl.

It has somewhat the habit of the preceding species, but is readily distinguished by being thick and opaque; in being longer in proportion to its breadth, and in having the volutions more raised; the body whirl too is not so large in proportion to the superior ones. In some instances we have seen this shell, when young, with an inclination to a groove, and *umbilicus* on the pillar lip, but never so large as in the other, and which always closes up with age.

We are indebted to Mr. BOYS for our first acquaintance with this species, from whom we received a great many specimens of all sizes, with a reference to Mr. WALKER's figure as above quoted: and who informed us, it is not uncommon on the coast of *Sandwich*.

Have since found it in tolerable abundance on the shore of *Biddeford* bay.

It seems Mr. WALKER had by some accident made a mistake, in placing a minute figure by the side of the large one.

18.

PARVUS.

Turbo parvus. *Da Costa*. p. 104.—*Walk. Min. Shells* f. 43.

Turbo æreus. *Lin. Trans.* iii. p. 66. t. 13. f. 29. 30. (*Adams*)

Turt. Lin. iv. p. 488.

Turbo lacteus. *Gmel. Syst.* p. 3604?

Don. Br. Shells. iii. t. 90.

Turbo subluteus. *Lin, Trans.* iii. t. 13. f. 15. 16. var. (*Adams*)

T. with

T. with a strong, conic shell, with five or six volutions, coarsely ribbed: colour various; some glossy white, others dark chestnut-brown, or pale rufous, sometimes variegated; but the most beautiful specimens are dark with white ribs: aperture sub-orbicular; outer lip thickened by a rib. A variety is only ribbed on the lower volution; others are sometimes found worn quite smooth and glossy, and might readily be mistaken for distinct species; but this is not unusual with many small shells taken amongst fine sand, by the constant friction of which they are worn and polished. The general size is about one eighth of an inch in length. Perfect shells have the ribs strong and distant, from nine to eleven on the body whirl.

We have found this species in great abundance in *Cornwall*, particularly at the land's end, and at *Falmouth*; and not uncommon on the coast of *Devonshire*, *Dorsetshire*, and various other parts; indeed, it appears to be one of the most common shells on all our sandy shores.

DA COSTA mentions it from *Guernsey*.

19.

Turbo costatus. *Lin. Trans.* iii. p. 65. t. 13. f. 13, 14. (*Adams*) COSTATUS.

Turt. Lin. iv. p. 487.

Tab. 10. f. 6.

Walk. Min. Shells. f. 47.

Turbo crassus. *Turt. Lin.* iv. p. 500.

Adams Microsc. t. 14. f. 20.

T. with

T. with a strong, sub-pellucid, glossy, white shell, with four or five volutions, much raised, and well defined by the separating line; furnished with strong ribs, and finely striated transversely, most conspicuous between the ribs: *apex* rather obtuse: aperture sub-orbicular; lip a little expanded, bordered by a strong, prominent, sulcated rim, striated in the depression: a ridge rises at the upper angle of the aperture, and runs transversely backward, then turns downward, and joins to the margin of the lip behind; this ridge is bordered above by a fine depressed line, where the longitudinal ribs terminate. Length nearly one eighth of an inch; breadth about one third its length. Dead and worn shells become opaque; in which state Mr. WALKER describes it as rare at *Sandwich*.

Mr. ADAMS found it on the coast of *Pembrokeshire*. It is not uncommon on various parts of the coasts of *Devonshire* and *Dorsetshire*, especially in sand from *Salcomb* bay; we have also taken it in sand from *Falmouth*, and other parts of *Cornwall*. In a recent state, it is one of the most beautiful microscopic shells, hitherto discovered on the shores of *Great Britain*.



20.

STRIATUS.

Turbo striatus. *Lin. Trans.* iii. p.66. t.13. f.25.26. (*Adams*)*Walk. Min. Shells.* f. 49.*Turt. Lin.* iv. p. 483.Turbo Shepeianus. *Turt. Lin.* iv. p. 501.*Adams Microsc.* t. 14. f. 22.

T. with

T. with a pellucid, glossy, white shell, with six volutions, somewhat rounded, and separated by a well defined line: the upper part of each volution faintly ribbed; the whole shell very finely and regularly striated transversely: *apex* moderately pointed: aperture sub-oval, marginated. Length one eighth of an inch; breadth rather more than one third of its length.

Live shells are covered with a brown *epidermis*, that obscures their beauty; in this state we found it plentiful at *Plymouth* at the roots of *algæ*. It is also common on other parts of the coast of *Devon*; and sparingly at *Falmouth*, and other parts of *Cornwall*. Mr. WALKER says *Shepey* island, very rare: and Mr. ADAMS found it on the coast of *Pembrokeshire*.



21.

T. with a strong, conic, glossy, white shell, with seven smooth spires finely collated: the volutions are somewhat rounded, and well defined by the line of separation; but scarcely interrupt the ribs, (which are seventeen or eighteen in number,) from continuing throughout the shell: aperture oval; outer lip strong; pillar lip replicate, smooth. BRYEREUS. Tab. 15. f. 8

A variety with stronger, and fewer ribs, not exceeding ten or twelve in number.

At first sight this has somewhat the appearance of *T.*
S f *costatus*

costatus, but the ribs are finer, more numerous, and destitute of the transverse striæ: in the aperture also it is essentially different, not possessing the marginated lip so conspicuous in that shell.

The size is double that of the *costatus*: length rather less than a quarter of an inch.

We received several of this pretty species from Mr. BRYER of *Weymouth*, who found them at different times on that coast. It is also an occidental shell.



22.

CONIFERUS.

Tab. 15. f. 2.

T. with a strong, taper, white shell, with six volutions terminating in rather an obtuse point, and furnished with about twelve undulated ribs, interrupted only by a fine separating line; the interspaces between them, at the top of each volution, are formed into small cavities, giving that part a scalloped or denticulated appearance; these singular indentations continue throughout the spiral divisional line: the ribs are crossed by extremely fine, close-set striæ, not discernable without the assistance of a lens: aperture oval, oblique, strongly marginated; pillar lip not reflected. Length a quarter of an inch; breadth one-third its length.

This very elegant shell we were favoured with by Mr. BRYER, who found it at *Weymouth* with the preceding species.

T. with

T. with a conic, sub-pellucid, white shell, with six DENTICULATUS. volutions, terminating in an obtuse point, furnished with nine or ten coarse ribs, that project at the top of each spire, forming strong indentations like the preceding species: aperture sub-orbicular; outer lip thickened by a rib; pillar lip smooth, indented, with one or two small tubercles at the base adjoining the ribs. Length not quite a quarter of an inch; breadth one half its length.

This species we have received with the last from *Weymouth*, and at first sight took it to be a mere variety of that shell; but upon more attentive comparison, it is found to have the aperture more approaching to round, and not properly marginated, but only thickened by a rib; it is much more conic, the ribs stronger, less numerous, and forming deeper denticulations at the junction of each spire; the interstices between the ribs destitute of striæ, and sub-pellucid; and what seems the strongest specific distinction is, that the ribs do not undulate, but run oblique to the left, from the aperture to the *apex*.

Turbo Cimex. *Lin. Syst.* p. 1233.—*Gmel. Syst.* p. 3589. 5. CIMEX.

Turt. Lin. iv. p. 481.—*Gualt.* t. 44. X.

Don. Br. Shells. i. t. 2. f. 1. 1.

Turbo cancellatus. *Da Costa.* p. 104. t. 8. f. 6. 9.

T. with four strong, conic, cancellated, white volutions, well defined by a considerable depressed line: it is remarkably thick for its size, and the decussated striæ are

S f 2

coarse

coarse, which gives it the appearance of being deeply punctured all over: *apex* rather obtuse: aperture sub-oval, margin thick; outer lip crenated on the inside. Length one eighth of an inch; breadth nearly one half its length.

We have found this species at *Falmouth* in *Cornwall*, and on the south coast of *Devon*, but rarely: have also received it from *Sandwich* in *Kent*.

It is sometimes taken in *Guernsey*, and is a shell of the *Mediterranean*; but does not seem any where plentiful.



25.

SUBUMBILICA-
TUS.

T. with a smooth, sub-glossy, conic, yellowish-white shell: volutions four or five, very tumid, the first occupying above half the shell: *apex* rather obtuse: aperture oval; outer lip even; inner lip a little reflexed, forming a fulcus or *sub-umbilicus*. Length one eighth of an inch; breadth one half its length.

This species, noticed by Mr. BRYER on the shore at *Weymouth*, differs from *Turbo Ulvæ* in being more ventricose, and more tumid in the volutions, and essentially in the aperture; and in being more umbilicated.

From *T. ventrosus* it not only differs in the greater proportional breadth at the base, but in the aperture being exactly ovate, and not contracted into an acute angle
at

at the upper end, as in that and the *Ulvæ*: it never grows to the size of the latter, and exceeds that of the former.



Turbo eburneus. *Adams Microsc.* t. 14. f. 15.
Walk. Min. Shells. f. 36.

26.
VENTROSUS.
Tab. 12. f. 13.

T. with a smooth, glossy, thin shell, with six ventricose, or much rounded volutions, of a light pellucid horn-colour; but when the animal is in it, the appearance is black: *apex* moderately pointed: aperture suborbicular, closed by a thin, wrinkled, corneous *operculum*: margin almost entire the whole way round. Length one eighth of an inch; breadth about one third its length.

This species is not uncommon on the *Kentish* coast, at *Folkstone* and *Sandwich*, confounded with *T. Ulvæ*, for which we have received it.

It is however perfectly distinct from that shell, and may be readily distinguished by its strongly elevated and rounded volutions, glossy appearance, and colour; the other being always dull-brown, opaque; and vastly thicker.

This shell retains the greater part of its black colour when preserved with the animal in; but dead specimens are opaque white, as Mr. WALKER describes it; and was probably the only state in which Mr. JACOBS had ever seen

seen it, by giving it the name of *eburneus*, (as Mr. ADAMS informs us.)

27.

ULVÆ.

Turbo Ulvæ. *Br. Zool.* t. 86. f. 120.—*Turt. Lin.* iv. p.499.

Da Costa. p. 105.

Helix Ulvæ. *Pult. Cat. Dorset.* p. 49.

T. with from five to seven smooth volutions, not rounded, but nearly flat, separated by a small line; *apex* moderately pointed: colour opaque, dark, or rufous-brown: aperture sub-oval; inner lip reflected on the *Columella*, forming a slight depression behind, but no *umbilicus*. Length generally about a quarter of an inch; but we have found it at *Poole* of an extraordinary size, nearly three-eighths of an inch long, and one eighth broad. Dead shells are frequently of a dull opaque white; *operculum* corneous, radiated with arched striæ from the inner margin.

This is a very common species in most of our inlets and harbours, but seldom on the open shores exposed to the fury of the waves.

Is frequent on *ulvæ* and other marine plants, and on the mud about high water-mark; sometimes in such vast profusion as to almost cover the surface: and it is observable, where these are found in quantity, scarce any other convoluted shell is seen, except perhaps *T. littoreus*, *T. rudis*, and one or two other common species.

Turbo

- Turbo Pullus. *Lin. Syst.* p. 1233.—*Gmel. Syst.* p. 3589. 6. PULLUS.
Pult. Cat. Dorset. p. 45.—*Turt. Lin.* iv. p. 481.
Don. Br. Shells. i. t. 2. f. 2. to 6.
Borlase Cornw. p. 276.
- Turbo pictus. *Da Costa.* p. 103. t. 8. f. 1. 3.

T. with four or five rounded, smooth, glossy volutions; the first large, making nearly half the length of the shell; *apex* not very pointed: colour so various that scarce two are found alike, but all more or less streaked and spotted in an elegant manner; generally pink, or purple with dark undulated lines, or spotted with white; sometimes purplish-brown with white spots. One variety has the lines extremely fine, appearing like striæ; others have them broad or marked with interrupted bands. Aperture sub-orbicular, large; in old shells spreading on the *Columella*. Length three-eighths of an inch; breadth half as much.

The *operculum* belonging to this shell seems to have escaped notice, indeed it is only to be found in live specimens, which we believe do not frequently occur; it is remarkably strong, thick, and testaceous, very convex, white, and smooth externally; the interior part, when separated from the animal, is a little concave, and has a small and singular spiral turn near to one end.

This beautiful species is not uncommon on many parts of the *Cornish* coast, especially at *Whitland* bay, and at *Falmouth*; and is equally plentiful on some of the shores
of

of *Devonshire*, particularly at *Milton* sands in the south, and *Ilfracomb* in the north; but is rarely procured alive, except at very low tides, or by dredging. Doctor PULTENEY speaks of it as a rare shell on the shores of *Dorsetshire*; and we believe grows scarcer eastward.

The animal is painted like its shell, with two very long filiform *tentacula*; beneath these, at the base, are two small black eyes; close to which are two minute feelers, or *cirri*, and on each side is another, little inferior in length to the *tentacula*; these appendages are in continual motion, and are capable of turning in all directions.

29.

PUNCTURA.

Tab. 12. f. 5.

T. with six very glossy, rounded volutions, rather taper in shape, and finely reticulated: colour transparent yellowish-white: aperture sub-orbicular. Length the tenth of an inch; breadth one third its length.

We found this elegant species at *Whitsand* bay in *Cornwall*, and in sand from *Salcomb* bay in *Devonshire*, but extremely rare; its beauty is only to be seen under a strong magnifier, as the work is extremely fine; by the aid of a microscope it appears delicately punctured all over, and wrought with extremely fine decussated striæ.

30.

RUBER.

Turbo Ruber. *Lin. Trans.* iii. t. 13. f. 21. 22. (*Adams.*)
Turt. Lin. iv. p. 488.

T. with

T. with five pellucid, smooth, glossy, reddish-brown volutions, rounded, and divided by a fine separating line: *apex* pointed: aperture sub-orbicular, a little reflected on the pillar. Length one eighth of an inch, or more; breadth nearly one third its length.

We found this species at *Whitsand* bay in *Cornwall*, and with it a shell in every respect like, but in colour, which is perfectly white, and so transparent that the whole of the *Columella* may be seen through the shell.



31.

T. with a thin, pellucid, white, smooth, sub-cylindric VITREUS. shell, with four very rounded volutions, separated by a deep depressed line: *apex* rather obtuse: aperture sub-oval, contracted at the upper end; outer lip thin; inner lip a little thickened. Length one eighth of an inch; breadth one third its length. Tab. 12. f.

This species must not be confounded for the white variety of the last described; it is more slender, the volutions are stronger, and run singularly more oblique; and is at once distinguished by its sub-cylindric shape, in which it resembles more the *T. striatus*; but differs from that shell in being perfectly smooth, and in not having a marginated aperture.

The *Columella* of this species is visible through the shell.

T t

We

We found it very sparingly at *Whitſand* bay in *Cornwall*.

32.

DECUSSATUS.
Tab. 12. f. 4.

Turbo pellucidus. *Lin. Trans.* iii. p. 66. t. 13. f. 33. 34?
(*Adams.*)—*Turt. Lin.* iv. p. 489.
Walk. Min. Shells. f. 52?

T. with a sub-pellucid, somewhat glossy, white shell, with five rounded volutions, well defined by the separating line; strongly striated longitudinally, and crossed with extremely fine striæ, in a decussated manner: *apex* not very pointed: aperture sub-oval, contracted at the upper part; outer lip thin; inner lip not spreading on the *Columella*. Length scarce one eighth of an inch; breadth not half its length.

We found this species very rare in sand from *Salcomb* bay. It differs from *T. Punctura* in being more inclined to a cylindric form, more strongly striated longitudinally, and in the aperture being more oval.

33.

RETICULATUS.

Turbo reticulatus. *Lin. Trans.* iii. p. 66. t. 13. f. 19. 20.
(*Adams.*)—*Turt. Lin.* iv. p. 488.
Adams Microsc. t. 14. f. 14.
Walk. Min. Shells. f. 32.

T. with a strong, conic, opaque, light-brown shell, with six rounded, and much raised volutions, strongly reticulated: *apex* pointed: aperture sub-orbicular, margin thick; inner lip spreading on the *Columella*, forming a

a

a groove or *sub-umbilicus*. Length scarce one tenth of an inch; breadth full one half its length.

We received this species from Mr. BOYS for WALKER's shell above quoted. That author describes it to be pellucid white: those we have examined were all opaque, and of a dirty-white, or light-brown; possibly dead shells. This is perfectly distinct from the preceding, being much broader in proportion to its length, more conic, more strongly striated transversely, and the aperture stronger, and more rounded.



Turbo canaliculatus. *Lin. Trans.* iii. p. 253? (*Adams.*)
Walk. Min. Shells. f. 46.
Turt. Lin. iv. p. 489.

34.
 SPIRALIS.
 Tab. 12. f. 9.

T. with a pellucid, glossy, white, conic shell, with four or five volutions; the largest marked with transverse, spiral ridges, half way from the base; the rest finely ribbed longitudinally: volutions nearly flat, but well defined by the separating line, which is marked with a very fine spiral ridge: *apex* rather obtuse; aperture sub-orbicular, pillar lip turns inward and forms an apparent small denticle, which in fact is a plication or ridge, that runs spirally some way up the *Columella*; a character in this and the three following species not subject to vary like the denticulations in some other shells, but is the constant formation of the *Columella*, occasioned by the intortion of the pillar lip, as in the *Voluta tornatilis*;

to which genus they become a sort of link. Length one line; breadth half its length.

We found this in sand from *Salcomb* bay in *Devonshire*, very rare.

35.



INTERSTINCTUS
Tab. 12. f. 10.

Turbo interstinctus. *Lin. Trans.* iii. p. 66. t. 13. f. 23. 24.
(*Adams.*)—*Turt. Lin.* iv. p. 488.

T. with a glossy, white, taper shell, with five, rather flat, but finely ribbed volutions, divided by a small separating line: *apex* obtuse: aperture sub-oval: pillar lip a little reflexed, with a single small tooth. Length one line; breadth one third of its length.

We found this species in sand from *Bigberry* bay in *Devonshire*: very rare.

36.



UNIDENTATUS.

T. with a strong, conic, smooth, glossy, sub-pellucid, white shell, with rather an obtuse *apex*: volutions five or six, not much raised: aperture sub-oval; outer lip plain; *Columella* furnished near the middle with one tooth. Length two tenths of an inch; breadth nearly one half its length.

We found this in sand from *Salcomb* bay, and alive on the *Pecten maximus*, dredged out of deep water; but is by no means common.

It might readily be confounded for *T. ulvæ* by its shape, but its single tooth is an invariable discriminating mark, independent of its colour, which is always glossy white, with usually a tinge of purple, or rose-colour at the tip.



37.

T. with a smooth, glossy, sub-pellucid, white shell, **PLICATUS.** with six rather slender spires terminating in an obtuse *apex*; the volutions are nearly flat, defined only by a fine, separating line; aperture sub-oval, contracted a little to an angle at the upper part; outer lip even; inner lip thickened, and furnished with a single tooth-like fold. Length one eighth of an inch; breadth one third its length.

Found in sand from *Salcomb* bay, but rare.

This species must not be confounded for *Turbo unidentatus*, which is vastly thicker and stronger, much broader at the base in proportion to its length, more tumid in the volutions, and larger in the aperture. It is more the shape of *Helix polita*, but is neither so finely pointed, nor is the aperture so long, and is at once distinguished from that shell by its tooth-like plication.



38.

T. with a smooth, white shell, rather slender in shape, **PALLIDUS.** with six or seven spires tapering to a moderately fine *apex*; the volutions not much raised, but separated by a well

well defined line : aperture sub-orbicular; outer lip arcuated; a faint duplicature on the pillar lip destitute of any tooth, but a small *umbilicus* is formed by its reflection. Length more than one eighth of an inch; breadth scarce one third of its length.

From *Salcomb* bay, sand, very rare.

39.

NIVOSUS.

T. with a smooth, glossy, white shell, rather slender, and tapering to an obtuse point : volutions five or six, much rounded, and deeply divided by the separating line : aperture sub-oval; inner lip, and *Columella* quite smooth and even: no *umbilicus*. Length nearly one line; breadth scarce one third its length.

This species has somewhat the shape of *Turbo interstinctus*, but is destitute of the tooth, as well as the ribs.

Found in sand on the south coast of *Devon*, very rare.

40.

SEMICOSTATUS.

T. with a short, conic, white shell, obtusely pointed : volutions four or five, rounded, well defined by the separating line, and wrought with faint ribs, and fine obsolete transverse striæ on the body whirl, both of which are inconspicuous on the superior spires; the ribs do not extend to the lower part even of the body, where the spiral transverse striæ become most conspicuous : aperture sub-

suborbicular; pillar lip a little reflexed, *Columella* limbata.
Length half a line; breadth one half its length.

Found in sand on the south coast of *Devonshire*, but very rare.

This at first sight might be confounded with *Turbo spiralis*, but differs in the volutions being more rounded, in the ribs being coarser, and in being destitute of the tooth-like plication of the *columella*.



Turbo trifasciatus. *Lin. Trans.* v. p. 2. t. 1. f. 13. 14? (*Adams*) UNIFASCIATUS.
Turt. Lin. iv. p. 500.

37.

T. with a smooth, conic, white shell, with one, and rarely two bands of purplish-brown on the body, one on the second spire, and sometimes also on the third: the number of volutions are five: and it is observable when it has two *fasciæ* on the lower spire, they occupy no more space than when there is but one: the spires are very little raised, and divided only by a small line: the bands on the superior ones are close to the separating line: aperture sub-oval; exterior lip thin, and turning outwards; inner lip spreading on the *Columella*; imperforated.

The figure given by Mr. ADAMS is longer in proportion than this shell, in every other respect corresponds. Length one eighth of an inch; breadth more than one third its length.

We

We found this species rare on the shore at *Southampton*, and in sand from *Burrow* island in *Devonshire*.

42.

CINGILLUS.

Tab. 12. f. 7.

T. with a conic, sub-pellucid shell, with six volutions, marked with alternate bands of horn-colour and chefnut-brown, usually three of each on the body, and two on the other spires; frequently obsolete towards the tip, which is of a uniform brown. Recent shells are obscurely striated with the whirls, but very conspicuous at the base: *apex* moderately pointed: aperture sub-oval, contracted at the upper part; outer lip thin, not turning outwards as in the last described; inner lip a little thickened; imperforated. Length exceeding one eighth of an inch; breadth one third its length.

This shell is readily distinguished from any varieties of the preceding, by the outer lip being in a line with the shell, not turning outward; by the brown bands being darker, and the intermediate space not so white; and in live shells by the spiral striæ, which are strong at the base; it is also a more slender shell.

We found this species in great abundance alive on the shore at *Plymouth*, in one particular spot only; and also at *Salcomb* at very low water.

43.

QUADRIFASCIA-
TUS.Cochlea parva. *Da Costa*, p. 85.

T. with

T. with a strong, smooth, sub-pellucid, sub-conic shell, with four volutions; the first very large, occupying more than half the shell: colour white, usually marked with four faint brown bands on the body, and sometimes two on the second spire; others have the bands united, and form two very broad ones on the first spire: *apex* rather obtuse: aperture sub-orbicular, thickened within, but sloped to a sharp edge on the outer lip; pillar lip broad, with a small groove ending in an *umbilicus*. Length rarely a quarter of an inch; breadth one eighth.

A variety is quite white; but those are old and worn shells; many appear plain white until carefully examined, when the faint bands may be traced. Live shells are darkest, and sometimes tinged with green. This species has somewhat the habit of *T. canalis*, but is at once distinguished by the thick outer lip; it never grows to half the size, is much stronger, more opaque, and at the base of the lower volution this has always an angulated appearance, or is sub-carinated; whereas the other is perfectly rounded at that part.

We found this shell plentiful at *Falmouth*, amongst sand from the harbour: and also on the south coast of *Devon*, particularly on the shore of *Salcomb* bay at low-water, inhabiting *algæ*.

44.

Turbo interruptus. *Lin. Trans.* v. p. 3. t. 1. f. 16. 17. (*Adams*) INTERRUPTUS.
Turt. Lin. iv. p. 500.

V v

T. with

T. with a pellucid, glossy white, conic shell, marked with interrupted, longitudinal, ochraceous streaks, most conspicuous on the two larger spires; frequently forming two rows of oblong spots on the lower one: volutions five, not much raised: *apex* moderately pointed: aperture sub-orbicular; outer lip not very thin; inner lip reflexed. Length one eighth of an inch; breadth one third its length.

We found this species at *Falmouth* in *Cornwall*; and on the coast of *Devonshire* sparingly at *Ilfracomb*, and in sand from *Salcomb* bay and other parts.

45.

RETIFORMIS.

Turbo tumidus quatuor anfractibus reticulatis apertura sub-ovali. *Walk. Min. Shells.* f. 37.

The Turbo with four tumid reticulated spires, with an oval aperture: colour white and opaque.

From *Sandwich*, very rare.

46.

FUSCUS.

Turbo quinque anfractibus striatis apertura sub-ovali. *Walk. Min. Shells.* f. 42.

The five-spired, striated Turbo, with a sub-oval aperture: colour opaque-brown.

From *Bysing Wood*, near *Faversham*, very rare.

Turbo

Turbo frigatus. *Adams. Microsc. t. 14. f. 16.*

Turt. Lin. 4. p. 500.

Turbo tribus anfractibus primo strigis tribus transversis apertura subovata. *Walk. Min. Shells. f. 38.*

47.

STRIGATUS.

The three-spined Turbo, the first spire with three transverse ridges, and a sub-oval aperture; the colour opaque white.

From *Seafalter*, very rare.



Turbo carinatus. *Turt. Lin. iv. p. 500.*

Adams Microsc. t. 14. f. 18.

Turbo turritus carinatus septem anfractibus apertura contracta marginata. *Walk. Min. Shells. f. 44.*

48.

CARINATUS.

The taper, carinated Turbo, with seven spires, and contracted, marginated aperture: colour opaque white.

From *Sandwich*, very rare.



Turbo striatus quatuor anfractibus apertura ovali marginata. RIVULUS.

Walk. Min. Shells. f. 57.

49.

The striated, four-spined Turbo, with an oval marginated aperture: colour opaque white.

From a stream near *Faversham*, very rare.

50.

SANDVICENSIS.

Turbo Sandvicensis. *Turt. Lin.* iv. p. 501.*Adams. Microsc.* t. 14. f. 23.

Turbo tribus anfractibus reticulatis apertura unidentata.

Walk. Min. Shells. f. 55.

The three-spined, elegantly reticulated Turbo, with one toothed oval aperture: colour pellucid white.

From *Sandwich*, exceeding rare.

The six preceding, minute species, we have been obliged to copy from the *Testacea minuta rariora* in Mr. WALKER'S OWN words.

51.

FULGIDUS.

Helix fulgidus. *Lin. Trans.* iii. p. 254. (*Adams.*)*Turt. Lin.* iv. p. 531.

T. with a sub-conic, pellucid, smooth, glossy shell, variegated with white and bronze, usually in bands: volutions three, the first very large: apex small, obtuse: aperture sub-orbicular, margin attenuated. Length half a line.

We found this species in sand from *Whit sand bay Cornwall*.

52.

ALBULUS.

Turbo quinque anfractibus longitudinaliter costatis, apertura subrotunda. *Lin. Trans.* iii. t. 13. f. 17. 18. (*Adams.*)*Turbo*

Turbo albulus. Shell opaque, with five longitudinal ribbed whorls: aperture roundish, not margined. *Turt. Lin.* iv. p. 488.



53.

Turbo testæ lævi tribus anfractibus, lineis fuscis characteri-SCRIPTUS.
formibus, apertura subrotunda. *Lin. Trans.* iii. p. 65. t.
13. f. 11. 12. (*Adams.*) Obs. Istæ lineæ lineis *Lichenis*
scripti omnino similes.

Shell smooth, opaque, with three whorls, and brown lines, resembling characters: aperture roundish. The lines exactly resemble those on the *Lichen scriptus*. *Turt. Lin.* iv. p. 487.



54.

Turbo decem anfractibus longitudinaliter costatis, testæ ad apicem subarcuata. Color albus. *Lin. Trans.* iii. p. 66.
t. 13. f. 27. 28. (*Adams.*) SUBARCUATUS.

Shell pellucid, white, and a little curved towards the tip, with ten longitudinal, ribbed whorls. *Turt. Lin.* iv. p. 488.



55.

A. *Turbo* sex anfractibus spirally striatis, costis remotis, ELEGANS.
apertura ovali. *Lin. Trans.* iii. p. 66. t. 13. f. 31. 32.
(*Adams.*)

Shell pellucid, with six spirally striate whorls, and remote ribs: aperture oval. *Turt. Lin.* iv. p. 489.

Not

Not *Turbo elegans* of GMELIN.

56.

DIVISUS.

Turbo quatuor anfractibus, lævibus et striatis; apertura sub-
ovali. *Lin. Trans.* iii. p. 254. (*Adams.*)

Shell pellucid, white, with four whorls, each divided
into two parts; the upper one smooth, the lower one
spirally striate: aperture sub-oval. *Turt. Lin.* iv. p. 489.

57.

SUBRUFUS.

Turbo subrufus, testâ lævi quinque anfractibus superne sub-
angulatis. *Lin. Trans.* v. p. 3. t. 1. f. 18. 19. (*Adams.*)

Shell smooth, with five whorls somewhat angular
above: opaque, dull red, the upper part of each whorl
marked with a white transverse band. *Turt. Lin.* iv.
p. 500.

The six last shells never having come under our in-
spection, we have been obliged to copy from the descrip-
tions of minute shells, given by Mr. ADAMS in the *Lin-
næan Transactions*, as productions of the coast of Pem-
broke-shire.

**LAND AND FRESH-WATER.†

58.

- Turbo Muscorum. *Lin. Syst.* p. 1240—*Gmel. Syst.* p. 3611. 94. MUSCORUM.
Chem. Conch. ix. t. 123. f. 1076.
Muller Verm. ii. p. 105. No. 304.
Schroet Erdconch. p. 140. t. 1. f. 7.
Br. Zool. t. 82. f. 118?
List. Angl. t. 2. f. 6.—*Turt. Lin.* iv. p. 499.
Petiv. Gaz. t. 35. f. 6.
Pult. Cat. Dorset. p. 46.
Don Br. Shells. iii. t. 80.

Turbo cylindraceus. *Da Costa.* p. 89. t. v. f. 16.

T. with a smooth, glossy, sub-pellucid, sub-cylindric shell, with six spires, of a yellowish-brown horn-colour; *apex* obtuse: aperture sub-orbicular, marginated; the margin white, a little reflexed, forming a depression, or *sub-umbilicus*; pillar lip frequently furnished with a single tooth. Length rather more than the eighth of an inch; breadth about one third its length. Dead shells frequently become yellow, and in a further advance towards decay are white and opaque.

The young, even after they are nearly arrived at full growth, are destitute of the white marginated aperture, and the tooth; nor indeed is this last mark always to be found in apparently adult specimens. In the more infant state it has a *trochiform* base and aperture.

This

† The *Turbo fuscus* and *rivulus* appear to belong to this division, but as they are unknown to us, it was thought proper to leave them together with the few other of Mr. WALKER's shells not identified.

This species seems to be pretty generally diffused, but is rather scarce in some situations: it is found under moss at the roots of trees, or in the crevices of the bark, and on old walls.

Doctor SOLANDER had named it *Turbo dolioliformis*, as Mr. BOYS informs us.

We have followed most authors in quoting *T. Muscorum* of the *British Zoology* for this shell, but cannot help expressing some doubt, as the figure does not in the least represent it, but is more like *Helix lubrica*.

GMELIN has erred in quoting tab. 1. fig. 6. of SCHROETER'S *Erdconchylien* for a variety of this, which he says, is furnished with eight teeth. That shell is perfectly distinct, and is certainly our *Turbo Juniperi*. The *muscorum* never has more than one tooth; and, as we before remarked, is as frequently without any.

Fig. 8. tab. 2. LISTER *Anim. Angliæ* which GMELIN has referred to for this shell, though with doubt, is certainly the *Helix obscura*.

In company with this is sometimes found, what must at present be considered as a variety; it is not above half so large, with the same number of volutions, and is exactly similar in shape, but the aperture is not margined; and is always destitute of the tooth.

Helix

Helix minuta. Muller. *Verm.* ii. p. 101. No. 299?

SEXDENTATUS.

Gmel. Syst. p. 3660?—*Tart. Lin.* iv. p. 538? Tab. 12. f. 8.

T. with a smooth, brown, horn-coloured, oval shell, with five spires somewhat rounded: *apex* obtuse: aperture sub-orbicular; outer lip uneven, sub-angulated; usually furnished with six teeth, four on the outer lip, and two on the inner. Length one line; breadth one half its length. Younger shells have only four teeth.

We first noticed this species on the *Iris pseudacorus* or yellow-flag, in a boggy place in *Cornwall*, and afterwards in *Devonshire*, but rare: and since in great abundance among the *rejectamenta* of the river *Avon*, after floods, about *Lackham* in *Wiltshire*; probably washed from the neighbouring meadows.

It is also found about *Sandwich* in *Kent*.

This shell might readily be confounded, at first sight, for the young of *T. muscorum*; the distorted aperture, and teeth, however, are at once specific marks of distinction. To *T. Vertigo* it also bears some resemblance, but the shape of the aperture, number of teeth, and contrary turn of the volutions of that shell, is sufficient to discriminate them.

If MULLER had not expressly said, "*apertura ovali edentula*" we should not have had a doubt of this being his *H. minuta*: the teeth, however, are not always readily

discovered, till the aperture has been well cleaned, and it is possible even that penetrating naturalist may have overlooked this circumstance, in a bad specimen of so minute a species.

60.

TRIDENS.

Tab. 11. f. 2.

Turbo tridens, *Gmel. Syst.* p. 3611.—*Turt. Lin.* iv. p. 499.*Pult. Cat. Dorset.* p. 46.—*Gualt.* t. 4. F.Helix tridens, *Muller. Verm.* ii. p. 106. No. 305.

T. with a sub-cylindric, smooth, glossy shell, of a light-brown colour: volutions six or seven, scarcely raised, or distinguished, but by the separating line: *apex* obtuse: aperture small and curved; outer lip furnished with one tooth on the margin; pillar lip a little reflexed, with two long and two short teeth alternate. Length a quarter of an inch.

The species here described we received from Doctor PULTENEY, who has given it in his Catalogue of *Dorsetshire* shells; and who says it is found on water plants, by the river *Stour* in *Dorsetshire*. Dead shells are usually white. It is possible most of this species may have only three teeth, especially such as are not full grown; those we examined were rather larger than usually described, and had all five teeth; two however are very small, and might easily be overlooked.

On the authority above stated, it is here given as
British

British, though it must be acknowledged we have never been fortunate enough to find it.



61.

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|--------------------|--|------------|
| Carychium minimum. | <i>Muller Verm.</i> ii. p. 125. No. 321. | CARYCHIUM. |
| | <i>Schroet. Flussconch.</i> p. 324. No. 122. | |
| Helix Carychium. | <i>Gmel. Syst.</i> p. 3665. | |
| | <i>Turt. Lin.</i> iv. p. 541. | |
| Turbo | <i>Walk. Min. Shells.</i> f. 51. | |

T. with a glossy, pellucid, white shell, with five volutions finely striated longitudinally, rounded, and well defined by the separating line: *apex* obtuse: aperture sub-oval, contracted, marginated; outer lip thickened inwards in the middle by a knob; pillar lip furnished with two teeth, and sometimes the rudiment of a third, above the other two. Length scarce one line; breadth one third its length.

This, the smallest of our land species, is not unfrequent in woods, and on mossy banks.

We have found it in several parts of *Wiltshire*, particularly in *Lackham* wood, and in drifted sand of the river *Avon*: also in *Devonshire*, and other parts. Is common in *Kent*. Mr. BOYS sent it to us from *Sandwich*, for Mr. WALKER's shell above quoted; who says, it is found on the mossy banks of a stream near *Faverham*.

The minuteness of this species has probably been the

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cause'

cause of its obscurity, for it is by no means uncommon under decayed wood, particularly the bark, in damp places. The striæ with which it is furnished are regular, but so extremely fine, as to render a good lens necessary to discover them.

MULLER, who has divided his shells into *genera*, from the structure of the animal inhabitant, has called this a *Carychium*, genus xxv. where this species stands alone; the characters are "*tentaculis duobus truncatis, oculis ad basin postice.*"

This author is perfectly correct; the animal is of a yellowish-white, with only two short, cylindric, obtuse, or truncated *tentacula*; at the base of which between, or nearly behind them, are placed two very conspicuous, approximating, black eyes.

62.

Linnæus.

Tab. 12. f. 12.

Schreeter *Erdeconch.* p. 140. t. 1. f. 6.*Chem. Conch.* ix. t. 135. f. 1236. a. b.

T. with a sub-cylindric, opaque, brown shell, with eight or nine spires striated longitudinally-oblique: the volutions are not rounded, or much raised, but well defined by the separating line; the four first are cylindric, the rest taper to an obtuse *apex*: aperture sub-orbicular, marginated, reflexed, white, furnished with seven teeth, three on the outer lip, and four on the *Columella*:* at the

* These projections, usually called teeth, are not properly denticles or tooth-shape protuberances, but are fine white *laminae*, or ridges, running

the base behind the pillar lip is a singular and large cavity, formed by the contraction of the throat, or interior part of the mouth, and the greatly expanded lips; the margin of the aperture does not quite meet upon the body whirl. Length rather more than a quarter of an inch; breadth not half its length.

This appears to be a rare shell, or at least extremely local in *England*. We first found it, very sparingly on an old mossy wall at *Easton Grey* in *Wiltshire*, ten or twelve years ago; and never since till lately, when we discovered considerable abundance at the roots of *juni-ber* bushes, on the sides of the hills, near *Devizes*, in the same county.

CHEMNITZ has given a tolerably good figure of this shell, but too large; and likens it to the *T. muscorum*, but that it is not pellucid, is sharper pointed, with nine spires; and has the mouth beset with teeth: and also observes, that SCHROETER remarks, it is not uncommon in *Thuringia*. Indeed it appears to be from the latter author, that the former obtained his knowledge of the shell; but unfortunately has jumbled with it the *Turbo tridens*, by quoting the *Helix tridens* of MULLER.

GMELIN has also fallen into this error, by quoting CHEMNITZ's shell for his *T. tridens*.

SCHRO-

spirally backwards, in a parallel direction to each other: those on the exterior lip may in most instances be traced through the outside of the shell, and are nearly a line in length.

SCHROETER makes a comparative description between this and the *T. muscorum*, and expressly says this has seven teeth: his figure is also more the natural dimensions, than that given by CHEMNITZ, who has made it nearly double its real size.



63.

ELEGANS:

- Turbo elegans. *Gmel. Syst.* p. 3606. 74.
Lister Conch. t. 27. f. 25.—*Id. Angl.* t. 2. f. 5.
Chem. Conch. ix. t. 123. f. 1060. a. to e.
Pult. Cat. Dorset. p. 45.—*Gualt.* t. 4. A. B.
Shroet. Flussconch. p. 366. t. 9. f. 15. a. b.
- Nerita elegans. *Muller Verm.* ii. p. 177. No. 363.
- Turbo tumidus. *Br. Zool.* t. 82. f. 110.—*Turt. Lin.* iv. p. 480
- Turbo striatus. *Da Costa.* p. 86. t. 5. f. 9.
Don. Br. Shells. ii. t. 59.
Morton Northamp. p. 415.
Turt. Lin. iv. p. 495.
- Turbo lincina. *Lin. Syst.* p. 1239?—*Gmel. Syst.* p. 3605. 71?
- Turbo reflexus. *Lin. Syst.* p. 1238?—*Gmel. Syst.* p. 3605. 70?

T. with five ventricose volutions, tapering to rather an obtuse *apex*, marked with strong spiral striæ, crossed by finer longitudinal ones, giving the shell a reticulated appearance: colour generally cinereous, with a tinge of purple, the tip frequently quite purple, and void of striæ; sometimes prettily fasciated with spots, or broken bands of purplish-brown, or longitudinally streaked with the same. Dead shells are often white. The aperture is orbicular, projecting on the pillar lip, a little reflexed;

mar-

margin faintly marked by the striæ: behind the pillar lip a cavity, or *sub-umbilicus*: *operculum* testaceous, spirally striated. Length five-eighths of an inch; breadth three-eighths.

This elegant species is the only *British* land shell with a testaceous *operculum*. It is rather local, but sufficiently plentiful in some parts; chiefly inhabiting dry gravel, or sandy soil, under moss. We have found it in great abundance, close to the sea at the roots of fern, to the west of *Tenby* in *Wales*; as well as in the woods at *Lackham* in *Wiltshire*. It has also been found in some parts of *Kent*, *Lincolnshire*, *Yorkshire*, and *Northamptonshire*.

DA COSTA says in *Surry* about *Darking*: and PENNANT in the woods of *Cambridgeshire*. Doctor PULTENEY observes, it is common on the higher downs of *Dorsetshire*, especially near the sea, and that he had seen it plentiful on *Hod Hill* near *Blandford*: we also noticed it on *Portland*, and at *Swanage* in the same county.

On the continent it is found in *France* and *Italy*; and according to CHEMNITZ on the *Pyrenean* mountains under bushes.

SCHROETER seems to have been puzzled where to place this shell, whether amongst his land, or fresh-water species; as he observes, some make the animal to possess four *tentacula*, while others give it only two: but appears

pears to have favoured the latter opinion; from whence he concludes, it must belong to the water, as the animals of all land shells possess four *tentacula*: and he appears the more confirmed in that opinion, on account of its being furnished with a strong testaceous *operculum*.

It is indeed the only instance we can produce, of a land shell being provided with a permanent testaceous *operculum*; but the animal of *Turbo Carychium*, as well as this, has but two *tentacula*: and MULLER informs us his *Vertigo pusilla*, our *Turbo Vertigo*, which is also a land shell, is inhabited by a *limax* of a more singular formation; for with only two *tentacula*, the eyes are placed at their tips: so that, although we have not hitherto discovered any aquatic *limax* with four regular *tentacula*,* yet such animal possessing only two, is not a criterion of its being an inhabitant of the water.

The animal of this shell has also another uncommon property for a land *limax*, as we are informed by LISTER, who says they are of different sexes. Whether this is the case in the few other land species with two *tentacula* remains to be proved; it is however probable, and that those with four *tentacula* are invariably hermaphrodite, and have their superior ones ocellated.

LISTER has further elucidated the subject, by giving
a

* The plumose appendage on the back of the head of *Turbo fontinalis* and *Helix cristata*, cannot be considered as proper *tentacula*.

a dissection of both sexes of the animal in his *Exercitatio* tab. 1. where it is represented with two *tentacula* only, and the eyes placed at their base. The same plate is given in his *Conchology* tab. 4. *Anat.* and unfortunately in these plates a figure is given of a compressed *Helix* without explanation; but which is evidently the shell of the animal figured at No. 4. in order to make a comparative view of the organs of generation. The want of some explanation of the figure of that shell has led to error and confusion; though he has expressly referred to Tit. 5. of his *Anim. Angliæ* for the proper shell of the anatomical figure of the *limax* in question.

GEOFFROY, as well as LISTER, was perfectly right in giving the animal only two *tentacula*, and in making it a land species.

The animal is of a pale brown colour, with a long snout, which is strongly striated transversely: *tentacula* two, somewhat compressed, wrinkled, and sub-clavated, with smooth, glossy, black tips:* eyes placed close to the base of the *tentacula* on the outside, a little elevated.

Y y

The

* It is perhaps to be doubted whether the smooth glossy tips to the *tentacula* are not really eyes, and as much deserving the appellation, as those on other species of land *limax*; if so, the animal is more essentially different from all others of its *congenera*, in possessing four such organs. Why LISTER should not have considered these sub-globular, highly polished extremities, as much the eyes as those placed at the base, is not to be determined: but if he was led to conclude they could not be such, because they were not internally retractile, or capable of being drawn within the *tentacula*; it is certainly not a sufficient reason: for it should rather be considered, that as the *tentacula* are

The snout is strong and muscular, and is used in crawling to hold by, in order to bring forward the body; it is also of considerable service in removing obstacles, especially the earth when it retires to its *hibernaculum*.

The *tentacula* are somewhat contractile, but not tubular; of course the animal is incapable of withdrawing their tips into the interior part, like the more common *limaces*.

64.

FASCIATUS.

Turbo fasciatus. *Br. Zool.* t. 82. f. 119.

Da Costa. p. 90.—*Favan.* t. 65. A. 1.

Don. Br. Shells. i. t. 18. f. 1. 1.

Lister Conch. t. 19. f. 14.

Turt. Lin. iv. p. 481.

Helix bifasciata. *Pult. Cat. Dorset.* p. 49.

T. with a thin, sub-pellucid, taper shell, with nine spires a little rounded, but not much raised: *apex* moderately pointed: volutions not regularly striated, but wrinkled across the whirls: colour white, longitudinally streaked

(for some wise purpose) formed to be constantly exerted, so it became necessary to protect so delicate a part by a corneous covering, as in the *Cancer* tribe.

With submission therefore to the anatomical abilities of Doctor LISTER, who certainly did not consider that part to be ocellated, we think it right to remark that, whoever, well qualified for the nice operation of the dissection of those parts, may hereafter undertake the investigation, we have little doubt but our conjectures will be ascertained to be just, and that the animal will really be found to possess four eyes, two on the tips of the *tentacula*, and two at their base.

streaked with brown or chestnut, which at the base frequently become confluent, and form one or two regular bands: aperture sub-oval; outer lip thin; pillar lip a little reflexed, forming a small cavity behind. Length near three-quarters of an inch; breadth a quarter.

This species was first noticed by LISTER in *Wales*; and afterwards by PENNANT as frequent in *Anglesea*, on sandy soil near the coast. It is certainly a local species, though very abundant in some places near the sea, and rarely, we believe, but in arenaceous soil, within the influence of saline air. On the coast of *Caermarthenshire*, and on the hill above *Whitsand* bay in *Cornwall*, it is in such vast profusion, that a person cannot step without crushing numbers. At the last place is a prevailing opinion, that they contribute much to fatten sheep,* it is indeed impossible that those animals should browse on such short grass without devouring a prodigious quantity, especially in the night, or after rain, when they ascend the stunted blades.

Y y 2

Is

* In the *History of Cornwall*, BORLASE says, p. 286. "The sweetest mutton is reckoned to be that of the smallest sheep, which feed on the commons where the sands are scarce covered with the green sod, and the grass exceedingly short; such are the *towens* or sand-hillocks in *Pwan-jand*, *Gwythien*, *Philac*, and *Senan-green*, near the land's end, and elsewhere in like situations. From these sands come forth snails of the turbinated kind, but of different species, and all sizes from the adult to the smallest just from the egg; these spread themselves over the plains early in the morning, and whilst they are in quest of their own food among the dews, yield a most fattening nourishment to the sheep."

Is also very plentiful in some parts of *South Devon*, close to the sea, especially at *Bigberry* bay: even the drifted sand at this place is full of dead shells, to the depth of four feet.

In all these places it is observable, that not one is to be found as soon as you quit the sandy soil.

DoctOR PULTENEY speaks of it as plentiful on the downs in *Dorsetshire*, near the sea. We found it also at *Kingsbridge* in *Devonshire*, not uncommon in one or two fields, probably brought from some distance in sand, (commonly used in that part for manure) as not a single shell is to be met with in any other place within some miles.

The *Turbo fasciatus* should seem to be peculiar to *England*, as we do not find it described as inhabiting the continent, by any foreign writer. It does not appear to be in the twelfth edition of the *Systema Naturæ*; nor is it, that we can find, in that of GMELIN, except where LISTER's figure of it is erroneously quoted for *Helix detrita*. MULLER and SCHROETER appear to be equally unacquainted with it.

65.

FONTINALIS.

Turbo fontinalis. *Pult. Cat. Dorset.* p. 45.
Don Br. Shells. iii. t. 102.
Walk. Min Shells. f. 56.
Petiv. Gaz. t. 18. f. 2.

Helix

- Helix piscinalis.* *Gmel. Syst.* p. 3627. 44.
Turt. Lin. iv. p. 512.
- Helix pufilla.* *Gmel. Syst.* p. 3627. 45.
Turt. Lin. 4. p. 513.
- Turbo thermalis.* *Gmel. Syst.* p. 3603. 61?
Turt. Lin. iv. p. 493?
- Trochus cristatus.* *Schroeter Flussconch.* p. 280. t. 6. f. 11.
- Nerita piscinalis.* *Muller Verm.* ii. p. 172. No. 358
Schroeter Flussconch. p. 247. No. 61.
- Nerita pufilla.* *Muller Verm.* ii. p. 171. No. 357.
Schroeter Flussconch. p. 246. No. 59.

T. with a thin, sub-pellucid, horn-coloured shell, with four or five much rounded, very prominent, smooth, or finely wrinkled volutions; the last small, and rather compressed, giving the shell an obtuse *apex*: aperture perfectly orbicular; lips thin; inner lip slightly attached to the body whirl: base perforated with a small, but deep *umbilicus*. Length and breadth nearly the same, rarely exceeding a quarter of an inch.

This species is not uncommon in some of our rivers and small streams; sometimes in stagnant waters, and particularly in drains or water-courses, in low swampy ground.

We have found it in various parts of *Wiltshire*, especially in the *Avon*, and in the moat round the old castle at *Marlborough*: in *Devonshire* not far from *Exeter*; and in *Dorsetshire* in *Perbeck* very plentiful. In the river *Kennet* about *Newbury*, it is not uncommon.

It is frequently covered with a concreted, stony matter, and sometimes a brown *epidermis*: dead shells are white.

Although by no means a scarce species, it has been in considerable obscurity, notwithstanding PETIVER gave a figure of it near a hundred years ago, and says, "I have observed this in fresh-water, and if I mistake not, in the *New River*."

MULLER has doubtless given this shell in two places, but in neither does he mention the singular structure of the animal inhabitant; a circumstance that would not have escaped the discriminating eye of that great naturalist, if it had ever come alive under his examination.

SCHROETER has given it in no less than three places, as so many distinct species; two of which are evidently those of MULLER: the other under the title of *Trochus cristatus*, describes both the shell and the animal perfectly well: he says he received it from Professor HERMANN, by the name of *Federbuschtragers* (plume-bearer), by which appellation it is also to be found in MARTINI *Berlin Magaz.* iv. 247. No. 59. GEOFFROY in his *German edit.* calls it *Cochlea depressa cristata*: in his *French edit.* *Le Port Plumet*.

From these authors it appears to have been found in water courses, small streams, and fish-ponds, about *Paris*, as well as in *Sweden*.

The

The *operculum* of the shell is corneous, permanent, wrought with fine spiral ridges, with a small knob in the centre.

The animal is of a pale colour, with two setaceous *tentacula* placed as usual, and another similar one, situated on the right side, close to the head; and near this, on the middle of the hind head, is an appendage of a most elegant plumose structure, (like that of the animal inhabiting *Helix cristata*,) very pellucid, extremely sensible, and capable of instantaneous retraction: the eyes are situated on the head, at the base of the two anterior *tentacula*.

***REVERSED.

Animal with the foramen on the left side.

We have thought it proper to make a separate division of the reversed shells of this genus, in order that they might be brought together the better for comparison; and perhaps it may not be improper in this place, to define what is really intended by this term.

Nothing appears more confused and incomprehensible than the various descriptions of different authors, concerning

cerning the spiral turns of a *heterostrophe* shell; some call it from right to left, others *vice versa*, from left to right.

Every conchologist knows, that most convoluted shells turn one way, and that there are a few species which are *heteroclitical*, or invariably turn contrary to the usual manner: some indeed have doubted, whether this is a permanent character; there requires, however, no argument to prove it is so, to those who have taken the trouble to examine the common species of *heterostrophe* shells, which daily present themselves to our notice in our rural walks. Indeed, it is rather strange, that not one of these shells, whose nature is to have their spires turn in the more unusual manner, has (to our knowledge) ever been met with to vary from that formation; as such accidental deformities have been found in a few instances, amongst those which are usually termed dextrals, or have the more usual spiral turns, and have become *lusus heterostrophon* shells.

In order therefore to explain, which way the turn of the spiral convolutions of a reversed shell takes, omitting the vague signification of turning to the right or left; we shall observe, that the more common turn of shells is with the apparent motion of the sun, or as the index or hand of a clock moves.

But in order to be more clearly understood; let us compare the spiral volutions of a shell to a common
cork-

cork-screw, and we shall find, that whether the mouth, or *apex*, is placed upwards, the spires will turn from the upper to the lower end like a common screw, which is in the same direction as the index of a time-piece, and what is commonly understood by a dextral or right-handed screw. As a further definition, such shells have their aperture on the right side, when examined with that end downward; and is in the direction of the sun's apparent motion.

On the contrary, a reversed shell, when placed in a perpendicular position, has its spiral volutions in an opposite direction to the motion of the index of a watch, or a clock, or to a common screw; and in fact resembles what is usually termed a sinistral, or left-handed screw. These have their aperture on the left side, or opposite the left hand of the person holding the shell with the mouth downward; and the opening is opposite the sun's apparent motion.

In order to determine whether a flat shell, whose volutions are laterally placed, is a reversed species, we have only to examine which way the volutions turn from the *apex* or centre, towards the mouth; and if we find it contrary to the motion of the index of a watch, it is a *heterostrophe*, or reversed shell: and *vice versa*,

In some of the more depressed species of *Helix*, or *Nautilus*, attention is requisite to be paid to the mouth,

in order to determine which is really the upper side of the shell, for it is on that side the spiral turns are to be taken from the centre or *apex*: and in most instances this is to be determined by the oblique direction of the aperture to the under part, where the lip rarely extends so far as on the upper part. In fixed shells, such as *Serpula*, there is no difficulty, as the side which is *sessile* must be considered as the base, or under part. Thus in the *Serpula lucida* the fixed part is sometimes very small, and the mouth protends spirally upwards in a contrary direction to the sun; and therefore must be considered a reversed or *heterostrophe* shell, the same as if the volutions nearest the mouth had turned laterally upon the the centre or fixed ones.

This shell, indeed, is most frequently found with regular lateral volutions; and though subject to great variety with respect to contortions, it invariably turns the aperture one way.

In some species of *Nautilus*, however, there can be no rule to ascertain whether it is dextral or sinistral; for when the aperture is exactly lateral, the lip collapses the body equally, and the sides of the shell similar, as in *N. Calcar*, it cannot be defined.

In others of that genus, as in *N. Beccarii* and *Beccarii perversus*, two shells, the principal distinction of which, is the contrary turn of their volutions, it is easily deter-

determined, by the convexity of the upper side; and of course, the aperture being placed somewhat beneath.

Having thus, we hope, pretty clearly defined what is a reversed shell, or at least explained what is considered as such by us, we shall proceed to describe the few of that family in the *Turbo* genus.



Turbo perverfus. *Lin. Syst.* p. 1240.

Chem. Conch. ix. t. 112. f. 959. a.

List. Angl. t. 2. f. 11?—*Favan.* t. 65. I. 4.

Berkenhout. p. 206. 3.

Hill Swanmerd. p. 69. t. 8. f. 1. 2.

Schroet Erdconch. p. 138. t. 1. f. 5.

66.

PERVERSUS.

Tab. 11. f. 12.

T. with eight or nine reversed, sub-pellucid, regular, tapering spires, of a yellowish or greenish horn-colour, obsoletely striated: volutions a little rounded, and divided by a deep separating line: aperture sub-orbicular; outer lip a little reflexed; pillar lip not detached, or projecting on the body whirl, the edges white and thin: in old shells a round, obsolete, tooth-like knob, is observable at the edge of the upper angle, but is most commonly without any. Length rarely exceeding a quarter of an inch; breadth one fourth of its length.

This species is extremely local, and by no means so plentiful or common as *T. bidens*, with which it is rarely found. We have taken it in *Wiltshire*, and in *Cornwall* near *Penryn*, in both places adhering to the trunks of

trees: and in *Devonshire* near *Kingsbridge*, under the loose bark of old apple trees, where no other shell was to be met with, but *T. Muscorum*.

No shell seems to have puzzled conchologists more than this; being generally placed in cabinets as the young of *T. bidens*.

The difficulty of obtaining a specimen, with a perfect full grown mouth, has probably led to this error. It differs however in shape, size, and colour, particularly in the bottom volution, which is even and round; whereas the *bidens* has a prominent ridge, and depression on that part; besides, the pillar lip of this reflects upon, and adheres to the body whirl, forming a small depression, or *sub-umbilicus*: in the other the pillar lip is perfectly detached, thick, and prominent.

CHEMNITZ has given a bad figure of this shell, and with it a variety, which is doubtless no other than a young *bidens*.

DA COSTA probably had never seen this species, and has given the *bidens* for the young, and the *T. labiatus*, for the adult shell. LINNÆUS particularly specifies his shell to be without teeth, by saying, "*Turbo perversus testa turrita pellucida, anfractibus contrariis apertura edentula.*" GMELIN has certainly not given this species for his *perversus*, as he says, "*testa pellucida: anfractibus contrariis non crenatis, apertura tridentata.* From this specific character, as well as from the size, which is stated

to be about three-quarters of an inch in length, there is little doubt but his shell is the *T. laminatus*.

Animal dusky above, light beneath; *tentacula* four, short, cylindric, clavate, furnished with eyes at the tips of the longest.



67.

- Turbo bidens. *Lin. Syst.* p. 1249.—*Gmel. Syst.* p. 3609. 37. BIDENS.
Turt. Lin. iv. p. 498. Tab. 11. f. 7.
Chem. Conch. ix. t. 112. f. 559. b. (young)
Lister Conch. t. 41. f. 39. (right hand.)
Id. Angl. t. 2. f. 10.
Pult. Cat. Dorset. p. 46.
Turbo perverfus. *Br. Zool.* t. 82. f. 116.
Don. Br. Shells. ii. t. 72.
Helix perverfus. *Muller Verm.* ii. p. 118. No. 316.
Strombif. perverfus. *Da Costa.* p. 108.

T. with twelve taper, reversed spires, swelling a little in the middle, and marked with fine longitudinal striae: the volutions rather flat, but well defined by the separating line: colour opaque chocolate-brown; frequently cinereous, or streaked with it, especially dead shells, or such as have been exposed to the sun: aperture sub-orbicular, the upper part compressed on the outer angle near to the body; pillar lip furnished with two teeth-like folds, that run a considerable way into the shell: the margin of the lip is white, a little reflexed; the inner lip is not lost on the body whirl, as in *T. perverfus*, but is raised, and perfectly

fectly detached from it; and at the back of the lower volution, behind the mouth, is a prominent ridge, and a depression. Length rarely half an inch; breadth one fourth its length.

This species is the most common of all the *British* land shells: it is found in every part of the kingdom in woods, and shady places, particularly on trunks of trees, mossy and ivy-grown walls. In its young state, before the mouth is formed, it has been confounded for *T. perversus* of LINNÆUS: but even in that state it is readily distinguished by the base being flattish, and appears unformed; which is never observed in the other at any age, the last volution being always rounded. In the colour too, it is essentially different, as in no instance is it found to be of that light, pellucid, greenish horn-colour.

DA COSTA, as well as others, has fallen into this error. DONOVAN has evidently given a figure of this shell, but is mistaken in quoting the *T. perversus* of LINNÆUS, as well as making it the *Strombiformis perversus*, of DA COSTA. The shell figured by that author is the *T. labiatus* of this work, though he erroneously describes the *T. bidens* as the young of that shell.

This species was called by DOCTOR SOLANDER *Turbo nigricans*.

Animal dusky: *tentacula* four, short, cylindric, clavate;

vate; the two longest furnished with eyes at their tips. The *tentacula* not so long in proportion, as those of the *perverfus*; colour of the animal darker.

Turbo *perverfus*. *Gmel. Syst.* p. 3609. 88.

Turt. Lin. iv. p. 498.

Br. Zool. t. 81. f. 17.—*Gualt.* t. 4. C.

Pult. Cat. Dorset. p. 46.

Chem. Conch. ix. t. 112. f. 960. No. 1.

Lister Conch. t. 41. f. 39. (left hand.)

Schroeter Erdconch. p. 137. t. 1. f. 4. a.

Helix bidens. *Muller Verm.* ii. p. 116. No. 315.

68.

LAMINATUS.

Tab. 11. f. 4.

T. with ten smooth, glossy, pellucid, reversed spires, of a rufous horn-colour: shape like the *T. bidens*, largest in the middle, and tapering from thence to a small round point: the volutions rather raised, but not prominent, yet well defined by the separating line: aperture sub-orbicular, compressed at the upper outer margin, where it joins the body; lip white, slightly margined, and reflexed; pillar lip a little thickened, not elevated, or detached from the body whirl, furnished with two white folds, or teeth-like *laminæ*, very conspicuous; and deep within the mouth are three or four prominent ridges, discernable through the shell when held up to the light. Length nearly three-quarters of an inch; breadth one fourth of its length.

In live shells, the animal gives it a dark appearance;
and

and when dried and contracted within, the upper volutions only, are of a dusky-brown colour. Old shells are sometimes worn and decorticated, becoming of a cinereous colour in streaks and blotches; but never regularly striated, though possessed of faint, longitudinal wrinkles, only observable by the assistance of a lens.

This species has been confounded with *T. bidens* and *perversus*. DOCTOR PULTENEY, in his Catalogue of *Dorsetshire* shells, makes it the last mentioned; says it is much more common than the *bidens*; and remarks, that it is much larger than that shell, and not rarely furnished with three teeth. Possibly the Doctor had never observed all the *laminæ* on the outer lip, but only the one on that part most conspicuous. It appears to be very local; for we have never found it but in *Lackham* wood, in the north of *Wiltshire*, and at *Bow Wood*, the seat of the Marquis of LANSDOWN, in the same county. It is, however, found sparingly in *Kent*, in the neighbourhood of *Sandwich*.

This species is like *T. perversus* on the back of the lower whirl, behind the lip, being quite even and rounded; but its superior size, shape, and laminated mouth, forbids its being confounded. From *T. bidens* it differs essentially, in being superior in size; in transparency, glossiness, and want of striæ, as well as in the connexion of the pillar lip to the body; and the back of the lip being even.

Animal

Animal light-brown, paler beneath; *tentacula*, and eyes, somewhat like the last.



Turbo bidens. *Gmel. Syst.* p. 3609. 87. var.?
Chem. Conch. ix. t. 112. f. 960. No. 2?
Schreeter Erdconch. p. 139. t. 1. f. 4. b.

69.
 Blandford.
 Tab. 11. f. 2.

Helix papillaris. *Muller Verm.* ii. p. 120. No. 317?
Gualt. t. 4. D. E?

T. with twelve or thirteen reversed, taper spires, of an opaque brown colour, marked with numerous, strong, and regular striæ the whole length of the shell, interrupted only by the separating line, which is moderately deep and well defined: aperture sub-orbicular, much compressed at the upper part, and slightly at the extremity: lips rather thick, white, and reflected; margin connected all round: pillar lip prominent, and detached, furnished with two white teeth-like *laminæ*, approximating. Length three-quarters of an inch; breadth one fifth of its length.

This species has much the habit of *T. bidens*, but is readily distinguished by its colour, superior size, and particularly the shape of the mouth. It is also observable that this shell, though much superior in size, has the teeth invariably much nearer together; the margin of the aperture is also more reflexed and more produced.

We first discovered this species sparingly at *Easton Grey* in *Wiltshire*; and many years after observed it in

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the cabinets of Mr. SWAINSON and Mr. SOWERBY, in London; by whom we are informed, it was not uncommon in the neighbourhood of the metropolis, especially in *Hyde Park*.



70.
LABIATA.
Tab. 11. f. 6.

Strombif. perversus. *Da Costa*. p. 107. t. 5. f. 15.
Chem. Conch. ix. t. 112. f. 957?

T. with nine reversed, taper spires, of an opaque, light-brown colour, wrought with numerous, strong, and regular striae, the whole length of the shell: the volutions are flat, separated only by a fine obsolete line, which does not interrupt the longitudinal striae: aperture sub-orbicular, with a *sinus* at the upper end, and furnished with two teeth-like *laminæ* on the inner lip; margin much reflected, very broad, thick, and white, surrounding the mouth; pillar lip a little detached from the body whirl. Length five-eighths of an inch; breadth one eighth.

This species cannot be confounded with any of the preceding *heterostrophe* shells, for independent of the unusually flat volutions, the broad, thick, marginated aperture, is an unerring mark of distinction.

DA COSTA seems to have known this rare species, having given a good description of it, as an old shell of his *Strombiformis perversus*; where he not only makes mention of the volutions, not jutting out beyond each other,

other, but that the border round the mouth is very broad, flat, thick, milk white, and turned greatly outwards. Which characters neither belong to the *T. bidens*, nor *perversus*.

That it is found in the neighbourhood of *London* is without doubt, as Mr. SWAINSON informed us it was noticed in *Hyde Park*, about twenty years ago, adhering to the trunks of trees, on the north side of the serpentine river, near its banks.

This gentleman further remarked, that he believed it to be scarce, never having found more than three or four, and those in an ozier-ground in *Battersea* fields, near the wind-mills, as far back as the year 1790.

We believe this was named by Doctor SOLANDER, *Turbo labiatus*, which name we have retained, especially as it seems to be known by it, and is so marked in Mr. SWAINSON's cabinet.



Vertigo pufilla. *Muller Verm.* ii. p. 124. No. 320.

Schroeter Flussconch. p. 349. No. 142.

Helix Vertigo. *Gmel. Syst.* p. 3664. 155.

Turt. Lin. iv. p. 541.

71.

VERTIGO.

Tab. 12. f. 6.

T. with an opaque, brown, oval shell, with five reversed spires faintly striated: apex obtuse: aperture suborbicular, sub-triangular, sub-marginated, indented, usually

ally furnished with three white teeth, two on the *Columella*, and one on the exterior lip opposite; and a large plate, or protuberance, at the angle of the outer lip. Length half a line, or scarce larger than a poppy seed.

It has much the habit of *Turbo sexdentatus*, but besides its being reversed, it is more cylindric, more obtuse at the *apex*, and differs essentially in the shape of the aperture, and in the teeth.

We were first favoured with specimens of this species by Mr. BOYS of *Sandwich*, who informed us, it was not uncommon at that place, on old walls covered with ivy: and have since found it rarely amongst the *rejeſtamenta* of the river *Avon* in *Wiltſhire*.

The infant ſtate of this ſhell has much the appearance of a *Trochus*, the aperture is quadrangular, tranſverſely compressed; and the baſe flat and umbilicated.

MULLER gives this ſhell ſingly, in his twenty-fourth genus, under the title of *Vertigo*: the characters being taken from the animal, run thus, "*Tentaculis duobus linearibus, apice oculatis.*"

This is, we believe, the only inſtance of a *limax* poſſeſſing but two *tentacula*, furnished with eyes at their tips, and none at their baſe.

With

With respect to the number of teeth, it is subject to some variety, having in one or two instances lately, found it to possess six, and the rudiment of a seventh; in which state MULLER has particularly described it, but does not mention the more usual appearance of that part, which for some time occasioned us to doubt, whether with propriety, the synonyms of MULLER's shell, could be affixed to it, though his calling it *sinistrorsa*, which implies a reversed, or *heterostrophe* species, inclined us to think it the same.

This naturalist says, it is found on rotten wood, but speaks of it as rare.

In the specimen now before us, the teeth are set in pairs, two on the *Columella*, two on the right side, and the same on the left, with the rudiment of a seventh between the two pair on the exterior lip: the plate described above, at the angle of the outer lip is less conspicuous, being elongated into one of the largest teeth.

MULLER says, "*Apertura sub-quadrata, margine summo albo, arcuato, ad anfractum oppositum transverso.*
 "*Dentes in ore aperturae sex minimi albi cum rudimento septimi, tres nempe in externo aperturae, tres in anfractu vicino.*"

Those who have an opportunity of examining this shell,

shell, will find this description to accord with ours, when it is observed, MULLER has apparently divided the natural order of the teeth; but it will be seen, the pair on the inner angle of the outer lip, stand one on each side, the upper of which, is considered by him as belonging to the *Columella*, or in the vicinity of the volution.

The irregular shape of the aperture might also be considered by some as a sub-square, but to us it appears more properly sub-trilateral, with rounded angles.

GEN. XXVIII.

HELIX.

Animal a LIMAX.

SHELL, univalve, spiral, sub-diaphanous, fragile.

Aperture contracted, either sub-rotund, or semi-lunart.

*OVATE, OR TURRITED.

1.

- Helix stagnalis.* *Lin. Syst.* p. 1249.—*Gmel. Syst.* p. 3657. 123. STAGNALIS.
Chem. Conch. ix. t. 135. f. 1237. 1238. Tab. 16. f. 8.
Muller Verm. ii. p. 132. No. 327.
List. Conch. t. 123. f. 21.—*Id. Angl.* t. 2. f. 21.
Schroet. Flussconch. p. 304. t. 7. f. 1. to 4.—t.
Min. C. f. 1.

Helix

† The very great connexion between the *Turbo* and *Helix* of the *Linnæan genera*, has frequently occasioned a removal of species from one to the other. Indeed, if none were to be placed in the former, but what had the aperture strictly orbicular, and entire; nor in the latter, any but those possessing a sub-lunar or roundish mouth, we should be at a loss where to place a great many species of both these *genera*. We have, however, followed the Swedish naturalist pretty closely, except in a few instances; particularly that of placing all the depressed species without any regard to the shape of the mouth, in the *Helix* genus.

Helix stagnalis. *Br. Zool.* t. 86. f. 136—*Gualt.* t. 5. I. L.
Da. Costz. p. 93. t. 5. f. 11.
Favan. t. 61. F. 16. & 23.
Pult. Cat. Dorset. p. 48.
Don Br. Shells. ii. t. 51. f. 2.
Turt. Lin. 4. p. 536.

H. with a thin, brittle, pellucid, horn-coloured shell, with six or seven spires, the first very large. the others small and tapering to a very fine point; body a little wrinkled longitudinally, with a few faint, irregular, transverse ridges; aperture oval, large, more than half the length of the shell; outer lip thin; pillar lip thickened, smooth. Length one inch and three quarters; breadth one inch.

This species which is the largest of all our fresh-water univalve shells is not uncommon in many of our slow rivers, and stagnant waters. It is frequently covered with a green *epidermis*, and sometimes a concreted stony matter, that almost obliterates the upper volutions. Some authors have made this shell into two or three species, apparently from size only.

Mr. PENNANT has figured the *H. palustris* as a variety, tab. 86. letter B.

It is subject to a gibbosity on the body whirl, which in some old shells is large and very prominent.

The

The figure of this common species is given, for the purpose of comparing with it, what is considered as the *H. fragilis* of LINNÆUS; for which reason a medium specimen was chosen for the engraving, in order to adapt the size to that of the other.



Helix fragilis. *Lin. Syst.* p. 1249.—*Gmel. Syst.* p. 3658. FRAGILIS.

Schroeter Flussconch. p. 309. t. 7. f. 8? Tab. 16. f. 7.

H. with a thin, pellucid, horn-coloured shell, much resembling *H. stagnalis*, but is more slender, particularly in the smaller spires, and the volutions are usually more diaphanous, and always turn more oblique.

There is very little doubt that this is the *H. fragilis* of LINNÆUS, but whether it is really distinct is difficult to determine; all we can say is, that till very lately no shell of such slender growth had ever occurred to us, amongst the *stagnalis*, in the various parts of the kingdom we have taken that shell: and upon a comparison of all the varieties of the *stagnalis* received from our friends, a considerable difference appears, more particularly in the smaller shells, which are much more slender in the superior volutions.

The only place in which this has ever occurred to us, is the canal intended to make a junction of the *Kennet* and *Avon*, between *Chippenham* and *Laycock*, in *Wiltshire*: many, that were collected from that water, were

all of the same slender shape; and in the younger shells, there were, in all we examined, a few opaque white lines, crossing the smaller volutions. The largest measured an inch and a half in length, and not quite three-quarters of an inch wide, in the largest part.

There does not appear to be any material difference between the animals of these two shells; both are of a yellowish colour, with two short, flat, conic *tentacula*, at the base of which the eyes are situated: the sexes too are distinct, as is usual in aquatic *limaces*.

Having said thus much, we must leave to future observations the actual determination, whether it is really distinct or not: in giving it a separate place, we have only followed the example of abler naturalists, but we must confess it admits of some doubt.

The figure given by SCHROETER for the *Linnæan fragilis*, we have quoted, but not without a note of interrogation, as it is not sufficiently taper, or slender in the smaller volutions.

3.

PALUSTRIS.

Tab. 16. f. 10.

Helix palustris. *Gmel. Syst.* p. 2658.—*Turc. Lin.* iv. p. 551.

Lister Conch. t. 124. f. 24.

Id. Angl. t. 2. f. 22.

Muller Verm. ii. p. 131. No. 326.

Schroeter Flussconch. p. 308. t. 7. f. 7. 9. 10.

& 11?—*Hill Swammerd.* p. 73. t. 9. f. 4.

Helix

Helix palustris. *Pult. Cat. Dorset*. p. 48.

Helix fragilis. *Muller Verm.* p. 48.

Helix stagnalis. *Br. Zool.* t. 86. f. 136. B. (var.)

H. with a sub-pellucid, brown, horn-coloured shell, with six spires, tapering to a sharp point; the volutions are a little rounded, but not much elevated, slightly wrinkled longitudinally, and sometimes marked with irregular transverse ridges, particularly on the body whirl: aperture oval, nearly half the length of the shell; outer lip thin; pillar lip replicated, in old shells forming a slight cavity behind; inside glossy purplish-brown, sometimes dark-purple. Length commonly about three-quarters of an inch; breadth three-eighths; but sometimes, though rarely, exceeds an inch in length.

This species is much more slender at the base than the *stagnalis*, and more gradually taper. It is not uncommon in watery ditches, in low swampy situations, in various parts of the kingdom; it does not, however, appear to be so generally known as *H. stagnalis*, and possibly has sometimes been confounded for the young of that species; as was the case with Mr. PENNANT. Doctor PULTENEY'S *H. fragilis* is only a variety of this shell, with the volutions rather more rounded, and the *apex* more obtuse. Such are not uncommon, and we are perfectly clear the Doctor's shell is no other, as he favoured us with a specimen.

The *palustris* is generally covered with a dark *epider-*

mis, sometimes almost black, and not uncommonly worn, or decorticated about the *apex*.

We have found it in *Kent, Hampshire, Wiltshire, Dorsetshire, Devonshire, Cornwall*, and other parts.

Animal dark cinereous, speckled with a lighter colour: *tentacula* short, flat, conic: eyes situated at their base.



4.

FOSSARIA.

Tab. 16. f. 9.

Helix glabra. *Gmel Syst* p 3658 ?

Schroeter Flussconch. p. 320. t. 7. f. 15 ?

Buccinum glabrum. *Muller Verm.* ii. p. 135. No. 328 ?

H. with a thin, pellucid, horn-coloured shell, with five or six spires: has much the habit of *Helix palustris*, but not half the size, and the volutions rounder, more deeply divided, and the aperture not so oblong: is also more generally slender, and rarely has any transverse wrinkles. Length three-eighths of an inch; breadth not one half its length.

This species is not uncommon in most parts of the kingdom, in moist places, particularly in muddy ditches, drains, and water-courses, which are frequently dry, in which case the animal perishes; for though it is more amphibious than any other species we are acquainted with, yet it cannot exist without moisture; it is, however, more frequently found at the edge of water, than in
it,

it, preferring moisture to actual fluid, and is rarely found immersed but in shallow pools, exposed to the sun.

It never creeps up the plants, but always keeps on the mud.

This shell has probably been confounded for the young of the *palustris*, but is generally of a lighter colour, and is rarely, if ever, found with that shell. It is extremely common in some parts of *Devonshire*, and in many other places, where the *palustris* is not to be found: in the southern parts of that county, every little splash, or muddy place by the road side is full of them; but have never found the other in those parts. We have even met with it upon the top of one of the highest hills in *Cornwall*, at the verge of a spring near the *Lizard*, where no other species of shell was to be found.

Animal dusky: *tentacula* two, somewhat compressed, short: eyes on the head, at the base of the *tentacula*.

5.
Helix peregra. *Gmel. Syst.* p. 3659.—*Turt. Lin.* iv. p. 537. PEREGRA.

Muller. Verm. ii. p. 130. 324.

Tab. 16. f. 3.

Favos. t. 61. E. 4.

Helix putris. *Br. Zool.* t. 86. f. 137.

Helix atrata. *Chem. Conch.* ix. t. 135. f. 1244. 1. 2.

Gualt. t. 5. f. C. C.

Schroet. t. 6. f. 3. 6.—t. 7. f. 12?—& t. *Min.*

C. f. 2.

H. with

H. with a thin, sub-pellucid; yellowish, horn-coloured shell, with four spires; the first very large and tumid, the others very small: *apex* fine, and pointed: volutions wrinkled longitudinally: aperture extremely large, oval, three-fourths the length of the shell; outer lip thin; pillar lip thickened; inside white, or yellowish: outside usually covered with a thick, blackish, or dusky-brown *epidermis*. Length one inch; breadth five-eighths, usually much less.

This species, the most common of all our fresh-water shells, is frequently confounded with *Helix auricularia*, which is a much more local shell; whereas this is found in most of our slow rivers, and stagnant waters.

Mr. PENNANT has given a good figure of it, and has quoted the *H. putris* of LINNÆUS. We do not however think it is that shell. DA COSTA has quoted PENNANT'S figure, for his *trianfractus*, which is probably the *H. putris* of LINNÆUS.

The animal is perfectly an aquatic species, and is never found to expose itself on the plants out of water. It is of a yellowish colour, with two broad, flat *tentacula*, a little tapering: eyes at the base of the *tentacula*, beneath.

SCHRÖETER has evidently confounded this shell with *H. auricularia*, and has made other species out of varieties.

Helix

- Helix auricularia*. *Lin. Syst.* p. 1240.—*Gmel. Syst.* p. 3562. AURICULARIA.
Chem. Conch. ix. t. 135. f. 1241. 1242. (Tab. 11. C. E.)
Gualt. t. 5. F. G.—*Favan.* t. 61. E. 3. E. 11.
Lister Conch. t. 123. f. 22.
Id. Angl. t. 2. f. 23.
Schroeter Flussconch. t. 6. f. 4. 5.
Muller Verm. ii. p. 126. No. 322.
Br. Zool. t. 66. f. 133.
Turt. Lin. iv. p. 540.
Pult. Cat. Dorset. p. 49.
Don. Br. Shells. ii. t. 51. f. 1.
- Turbo patulus*. *Da Costa.* p. 95. t. 5. f. 17.

H. with a thin, brittle, sub-pellucid shell, of a light yellow colour, with four spires, the first extremely large, occupying almost the whole of the shell: *apex* very sharp pointed: the largest volution is longitudinally wrinkled, and frequently marked with one deep depression: aperture sub-oval, extremely large; outer lip much extended, thin, and somewhat reflexed, especially at the base; the upper part rises high, is much rounded at the junction, and frequently projects in a right angle; pillar lip replicated; within smooth, yellowish. The outside of the shell is somewhat glossy, but frequently covered with a ferruginous-brown *epidermis*. Length an inch, or more; breadth three-quarters of an inch.

This, and the preceding species, have been in general, confounded for the same; there is, indeed, great similitude between some of the varieties, but the great characteristic

characteristic distinction is, that the second volution of this, is much smaller, and as it were more sunk in the body whirl; the aperture much larger, more expanded, and rising to a shoulder as high as the opposite side of the volution; the body too, is vastly more tumid in general.

This is not near so common a shell; though it is not un plentiful in some parts, in large stagnant pools, and slow rivers. We have found it of a superior size in the the river *Avon*, in the north of *Wiltshire*: and is not uncommon in the *Kennet* in *Berkshire*.

Doctor PULTENEY speaks of it as a *Dorsetshire* shell; but we never could find it either in that county, *Devonshire*, or *Cornwall*; where the *H. peregra* is very common.

Animal dull greenish-yellow: head broad: *tentacula* broad, flat, conic, speckled with brighter yellow: eyes placed on the head, at the base of the *tentacula*. Is capable of receding within its shell as much as the *peregra*, and does not cover any part of it when in motion, like the *glutinosa*.



PUTRIS.

Tab. 16. f. 4.

Helix putris. *Lin. Syst.* p. 1249.—*Gmel. Syst.* p. 3659.
Chem. Conch. ix. t. 135. f. 1248.
Schroeter Erdconch. p. 128. t. 1. f. 2.
Id. Flussconch. p. 265. No. 98.
Hill Swammerd. p. 69. t. 8. f. 4.

Helix

Helix putris. *List. Conch.* t. 123. f. 23.—*Id. Angl.* t. 2. f. 24?

Turt. Lin. iv. p. 538.—*Gualt.* t. 5. II.

Helix limosa. *Pult. Cat. Dorset.* p. 48.

Helix succinea. *Muller Verm.* ii. p. 97. No. 296.

Turbo trianfractus. *Da Costa* p. 92. t. 5. f. 13.

H. with an extremely thin, pellucid shell, of a reddish-yellow colour, inclining to orange, with three spires; the first very large, making at least four-fifths of the shell; the others of course very small, but the middle one is vastly superior in size to that which forms the *apex*: it is a little wrinkled longitudinally, but glossy: aperture oval, extending two-thirds the length of the shell; outer lip extremely thin, frequently quite membranaceous, and elastic; pillar lip very slightly thickened. Length three-quarters of an inch; breadth not half an inch; but usually not near so large.

It is a very common species in wet places, amongst willows, and sub-aquatic plants: in its first state is greenish-yellow, almost membranaceous, and afterwards becomes more orange. Dead shells are frequently bleached white.

The animal is not an aquatic, though it resides always near water, or in moist places, upon the stalks and leaves of plants; it is, indeed, sometimes found in water, but we consider it more by accident than choice, and soon regains its former station on some neighbouring plant.

This species has been greatly confounded with its congeners, *H. peregra*, and the young of *H. auricularia*, but is at once distinguished by its transparency, and by the form of the body volution, which is very little swelled, and tapers to the second spire without any promi- nency at the junction; and the division, or separating line, runs much more oblique: it is never covered with an *epidermis*, and is more slender in proportion to its length.

CHEMNITZ has given a tolerable good figure of this shell, and quotes the *H. putris* of LINNÆUS; and GMELIN quotes CHEMNITZ's figure for his *putris*.

DA COSTA's description seems to answer tolerably well for this shell, but his figure is more like *H. peregra*, and he has quoted Mr. PENNANT's *H. putris*, which is certainly that shell, not only in figure, but is described to inhabit ponds.

The animal of this has four *tentacula*, situated like the generality of land *limaces*, two long and two short; and the eyes are placed on the top of the longest;* these
tentacula

* It is more fully stated in another place that the aquatic species of *limax*, or such as can exist under water, are invariably possessed of two *tentacula* only, and those destitute of eyes at their tips. LINNÆUS, as well as GMELIN, particularly remarks, that the animal of *H. putris* has four *tentacula*; a character sufficient to determine all controversy, for none of the animal inhabitants of the other shells hitherto confounded with this, have more than two *tentacula*, and those differing in shape.

tentacula however, are rather short in proportion, and a little clavated at the point; about half way down is a sort of annulation, from which part it suddenly increases in size, and then continues cylindric to the base; these are dusky behind, continuing in a line on each side the head, backwards. The colour of the animal in general, is pale yellowish, spotted with cinereous: it is larger in proportion to its shell, than any other species we are acquainted with, the *H. glutinosa* excepted, not being capable of withdrawing its body within the margin of the aperture.



Helix glutinosa. Gmel. Syst. p. 3659.

Turt. Lin. iv. p. 537.

Buccinum glutinosum. Muller Verm. ii. p. 129. 323.

Schroeter Flussconch. p. 271, No. 79.

8.

GLUTINOSA.

Tab. 16. f. 5.

H. with an extremely thin, diaphanous, sub-orbicular shell, of a glossy yellowish horn-colour, nearly smooth, or obsoletely wrinkled: volutions three, the first, or body, occupying almost the whole of the shell; the others extremely small, and so little produced, as scarce to be seen when the shell is lying with its mouth upwards: aperture oval, vastly large, extending nearly to the *apex*; no actual duplicature on the inner lip, nor the least inclination to a cavity, or *umbilicus*; but the under part of the body is more opaque and wrinkled, and less glossy for a considerable space from the aperture, than any other part of the shell. Length rather more than half an inch; breadth three-eighths.

C c c 2

This

This species was first noticed as an *English* shell by Mr. Boys, who with his usual liberality, favoured us with several specimens, together with remarks upon its natural history. It is an aquatic species, and not uncommon in the marshes at *Deal*.

The animal is possessed of only two flat, triangular, *tentacula*, with the eyes at the base: and when undisturbed, covers its shell with a fine transparent membrane.

Is found on the leaves of the yellow water lilly, *Nymphaea lutea*.

We are inclined to believe this is a very local shell in *England*, though possibly may have been overlooked as the young of the *auricularia*; from which, however, it is easily discriminated by its almost membranaceous texture, obtuse, and depressed *apex*; as well as being destitute of the *sub-umbilicus* formed by the *repand* lip of that shell: the animal too, is essentially different.



9.

LUTEA.

Tab. I. fig. 6.

II. with a sub-oval, sub-pellucid, moderately strong, smooth shell, of a dull orange-yellow colour: volutions scarcely three, the first extremely large, the others very small: *apex* obtuse, not prominent: aperture patulous, oval; outer lip not attenuated; inner lip pretty strong, and a little spreading on the *Columella*. Length nearly half an inch; breadth rather more than a quarter.

This

This shell has somewhat the habit of *II. limosa*, but not quite so tumid, and though of inferior size, is always much thicker and stronger. If, indeed, it had ever occurred in fresh-water, we might have been inclined to consider it a variety of that species, but hitherto it has only been found on the sea shore, and that rarely.

We have taken it upon the open part of the coast of *South Devon*, and believe it has been dredged up in *Salcomb* bay, but generally mutilated at the *apex*, and never alive; from which circumstance doubts may be entertained, of its really belonging to that class of shells. All we can say further on the subject at present is, that the substance of the shell is superior to any of its affinities, and the number of volutions inferior to those, to which it bears the greatest resemblance. If the delicate texture of our fresh-water shells was capable of bearing the violent agitation of the sea, and the consequent friction, many would undoubtedly be found on our shores: but this very rarely happens, even in our bays and inlets, and no one instance has ever occurred to us, on the open or more exposed shores, except with the *Helix vivipara*.



- | | |
|---|---|
| <p><i>Helix limosa</i>. <i>Lin. Syst.</i> p. 1249.—<i>Gmel. Syst.</i> p. 3661.
 <i>Chem. Conch.</i> ix. t. 135. f. 1246. 1247.
 <i>Schroeter Erdconch.</i> p. 131. t. 1. f. 3.
 <i>Turt. Lin.</i> iv. p. 539.</p> | <p>10.
 LIMOSA.
 Tab. 16. f. 1.</p> |
|---|---|

H. with

H. with a thin, glossy, pellucid, horn-coloured shell, with four spires, the first extremely large and tumid, the others very small, and the *apex* very fine.

This species has so much the habit of *Helix auricularia*, that it is not an easy matter to separate it from the young of that shell. We have, however, followed the very respectable authors above quoted, in giving it a distinct place, though not without some doubts. It rarely exceeds five-eighths of an inch in length, and three-eighths broad.

The only distinction seems to consist in the body, or first volution of this shell, being less ventricose at the junction of the second spire than in the *auricularia*; in being thinner and more transparent, and the mouth not so patulous.

We first received this shell from Mr. BOYS of *Sandwich*, where it is not uncommon; and have since found it sparingly in the river *Avon*, in *Wiltshire*.

The shell here described, answers very well to the description and figure given by CHEMNITZ, which GMELIN quotes for the *Linnæan limosa*.

LAEVIGATA.

Helix laevigata. *Lin. Syst.* p. 1250.—*Gmel. Syst.* p. 3663.
Pult. Cat. Dorset. p. 49.—*Turt. Lin.* iv. p. 540.
Don. Br. Shells. iii. t. 105.

Helix

Helix lævigata. *Walk. Min. Shells.* f. 17.

Br. Zool. t. 86. f. 139.

Helix neritoidea. *Chem. Conch.* x. t. 165. f. 1598. 1599?

H. with a thin, fragile, sub-pellucid, flesh-coloured shell, with three volutions; the first extremely large, the others very small, very little produced, and placed laterally: *apex* compressed. It is wrinkled transversely, and slightly striated longitudinally or spirally, but always, when alive, covered with a thick, rough, brown *epidermis*, which generally rises into regular, equi-distant, membranaceous, spiral ridges: aperture sub-orbicular, vastly large, margin thin; inside smooth, light purplish-brown; sometimes nearly white: no *umbilicus*.

This appears to be rather a scarce shell, but is found sparingly upon some of our shores. We have taken it by dredging at *Southampton*; and at *Torcrofs* and *Salcomb* in *Devonshire*: have also found very small specimens on the shore at *Teignmouth*; and at *Falmouth* in *Cornwall*. The largest in our cabinet is three-quarters of an inch in length, or rather more, and five-eighths in breadth; but it is rarely found half an inch long. Mr. PENNANT was mistaken in supposing it to inhabit fresh-water: it is rather a pelagic shell, and seldom taken alive but in deep dredging. Doctor PULTENEY gives it as a *Dorsetshire* shell, and says it was found on the beach at *Studland*. We have also taken it at that place, and have received it, very small, from Mr. BOYS at *Sandwich*, for the species figured by WALKER.

The figure given by CHEMNITZ, we have referred to, with doubt, as it appears to be more regularly, and strongly striated longitudinally, and seems to possess a fulcus or groove in the pillar lip, as well as exposing more of the *Columella*: that author, however, quotes WALKER'S shell.

If it should be *H. neritoidea* in a depauperated state, it may also be the *Bulla velutina* of MULLER *Zool. Dan.*

Animal whitish, with two short, setaceous *tentacula*; and two eyes placed at their base behind: *sustentaculum* broad, oval.

12.

DETRITA.

Tab. 11. f. 1.

Helix detrita. *Pult. Cat. Dorset.* p. 49.

Chem. Conch. ix. t. 134. f. 1225. a. d.

Gmel. Syst. p. 3660.—*Gualt.* t. 5. N.

Muller Verm. ii. p. 101. No. 300.

Turt. Lin. iv. p. 538.

Schroet Erdconch. p. 27. t. 1. f. 1.

Id. Flussconch. p. 324.—t. *Min.* A. f. 4.

Helix acuta. *Gmel. Syst.* p. 3660. 136.

Turt. Lin. iv. p. 538.—*Gualt.* t. 4. f. N.

Muller Verm. ii. p. 100. No. 297.

Chem. Conch. ix. t. 134. f. 1224. No. 1. 2.

Favan. t. 65. A. 5.

H. with a sub-pellucid, conic shell, tapering to a moderately fine point: volutions six, not much elevated, but a little rounded, and well defined by the separating line:

line: colour white, somewhat glossy, a little wrinkled longitudinally, and commonly marked with one ferruginous band, or *fascia*, round the middle of the body, continuing spirally up the shell, at the base of the other volutions, but fainter, and lost in the fourth spire: aperture oval; outer lip thin; inner lip a little reflected on the *Columella*, forming a small cavity, or *sub-umbilicus*. Length three-quarters of an inch; breadth three-eighths.

This species appears to be subject to considerable variety with respect to the bands; some have three *fasciæ* on the body, the middle one of which is very narrow, the others broad: the second volution has one, and sometimes two; the other spires are covered by the band, except at their junction. Others have the *fasciæ* broken into longitudinal streaks; which, as well as the banded specimens, are frequently faint and obsolete on the under part, in the line of the mouth.

Doct^r PULTENEY states this shell to have been found near *Weymouth*, by Mr. BRYER. We have been favoured with specimens from that gentleman, who at the same time informed us, he found them in a pool near *Weymouth*, and in a stream near *Dorchester*; but rare in both places; and that all the *English* specimens, he had seen, were destitute of bands.

These are not so white and opaque as foreign shells, but rather inclining to light horn-colour; are thinner:

D d d

and

and more diaphanous: and when the animal is suffered to remain within the shell, it contracts, and gives a darker colour to the superior volutions.

It is certainly a very rare species, or so large a shell could not have so long escaped notice.

The *H. acuta* figured by CHEMNITZ, which he states to be found in *Italy*, appears to be only a variety of the *detrита*.

GMELIN has considered them as distinct; but has fallen into an error in quoting *Lister Conch.* t. 19. f. 14. the *Turbo fasciatus* of this work, which is perfectly distinct, and does not seem to have been known to LINNÆUS. MULLER has made the same mistake. DOCTOR PULTENEY had certainly considered the *H. detrита* and *acuta* as only varieties, as he quotes both those shells figured by CHEMNITZ.

13.

VIVIPARA.

Helix vivipara. *Lin. Syst.* p. 1247.—*Gmel. Syst.* p. 3646. 105
Chem. Conch. ix t. 132. f. 1182. to 1185.
Petiv. Gaz. t. 99. f. 16.—*Gualt.* t. 5. A.
Lister Conch. t. 126. f. 26.—*Id.* tab. *Anat.*
 f. 6.—*Id. Angl.* t. 2. f. 18.
Schroeter Flussconch. t. 3 f. 1. 2.—& t. *Min.*
 C. f. 6.—*Favon.* t. 61. D. 9.
Br. Zool. t. 84. f. 132. & t. 85 upper fig.
 (young.)—*Don. Br. Shells.* iii. t. 87.

Helix

- Helix vivipara.* *Turt. Lin.* iv. p. 528.
Hill Swammerd. p. 75. t. 9. f. 13.
Pult. Cat. Dorset. p. 48.
Helix compactilis. *Id.* p. 43. (young.)
Cochlea vivipara. *Da Costa.* p. 81. t. 6. f. 2. 2.
Nerita vivipara. *Muller Verm.* ii. p. 182. No. 370.

H. with six ventricose spires, separated by a deep, depressed line: shape sub-conic, suddenly terminating in a small point: colour olive-green, with three brown *fasciæ* on the body, and two on the superior volutions, growing fainter, and becoming obliterated before they reach the fourth spire: it is slightly wrinkled transversely, with two or three stronger, and coarser than the rest, that seem to mark the annual growth of the shell: aperture sub-orbicular, contracted a little at the upper part; pillar lip reflected, behind which, in some, is a *sub-umbilicus*; inside smooth, white, banded like the outside. Length rarely an inch and a half; breadth one inch.

DA COSTA is certainly mistaken, in saying this shell is found in great abundance in all our rivers and stagnant waters; for except in the *Thames*, and other waters communicating with that river, we have never found it. In the neighbourhood of *Reading*, near the junction of the *Kennet* with the *Thames*, and in streams, and water-courses about that place, it is in vast abundance; but becomes scarce farther up the former river, and is wholly lost before it reaches *Newbury*.

The same author has also erred in calling the *operculum* of this shell testaceous, for it is of a flexible, corneous substance, wrinkled concentrically, and of a pellucid, reddish-brown colour.

The animal is viviparous, and very prolific; we have taken a great number of young ones from the larger shells, each with their testaceous covering and *operculum*.

Shells, not half grown, have the spires less produced, and their volutions not so tumid; in which state it has been taken for a distinct species; and we consider the *H. compactilis* of Doctor PULTENEY, and the shell figured by Mr. PENNANT, without number, in plate 85, to be no other.

The *vivipara* is the strongest fresh-water shell in *England*, capable of bearing, for a time, the rude actions of the sea; so that it is sometimes found on our more exposed shores; we have dredged it up from the deep at *Torcrofs*, inhabited by *Cancer Bernardus*. The most contiguous river is the *Dart*, at the distance of six miles, apparently too rapid for such shells: possibly they inhabited a lake of fresh-water contiguous, which a few years since broke its bounds, and made a temporary junction with the sea: it has not, however, occurred in any of the rivers in *Devonshire*.

- Helix tentaculata*. *Lin. Syst.* p. 1249.—*Gmel. Syst.* p. 3662. TENTACULATA.
Chem. Conch. ix. t. 135. f. 1245.
Lister Conch. t. 132. f. 32.—*Id. Angl.* t.
 2. f. 19.
Petiv. Gaz. t. 18. f. 8.—*Gualt.* t. 5. B.
Schroeter Flussconch. t. 7. f. 19. to 22.
Br. Zool. t. 86. f. 140.
Turt Lin. iv. p. 539.
Hill Swammerd. p. 82. t. 10. f. 1?
Pult. Cat. Dorset. p. 49.
Don Br. Shells. iii. t. 93.
Walk. Min. Shells. f. 33. (pullus)
- Helix sphaerica*. *Gmel. Syst.* p. 3627.
Turbo Nucleus. *Da Costa.* p. 91. t. 5. f. 12.
Nerita Jaculator. *Muller Verm.* ii. p. 185. No. 37.
Nerita sphaerica. *Muller Verm.* ii. p. 170. No. 356. (pullus)
Schroeter Flussconch. p. 341. No. 82.

H. with a smooth, conic, pellucid, horn-coloured shell, with five, and sometimes six, rounded spires, divided by a deep separating line: apex pointed: aperture sub-orbicular, contracted at the upper part; outer lip moderately strong; pillar lip reflexed. *Operculum* testaceous, concentrically wrinkled. Length half an inch; breadth a quarter.

This is a very common species, found in most flow rivers, and stagnant waters. Is frequently covered with a dark-brown, or dusky *epidermis*: sometimes with a calcareous concretion. Dead shells become white. It is, we believe, the only species of *British* fresh-water shells

shells that possess a testaceous *operculum*, except the *Nerita fluviatilis*.

The *sphærica* of MULLER is certainly no other than a young, and more ventricose variety of this shell; such are not uncommon, perfectly white. WALKER has fallen into the same mistake, his figure 33, being no other than the young of the *H. tentaculata*; of which we are confident, having received his shell from Mr. BOYS.

Animal pale, with two very long, slender, fetaceous *tentacula*, which are continually in motion; at the base of these, are situated the eyes, which are protuberant.

15.

LUBRICA.

- Helix lubrica.* Gmel Syst p. 3661. 142.
 Turt. Lin. iv. p. 539.
 List. Angl. t. 2. f. 7.
 Petiv. Gaz. t. 30. f. 7.
 Chem. Conch. ix. t. 135. f. 1235.
 Morton Northamp. p. 415 ?
 Muller Verm. ii. p. 104. No. 303.
 Schrecker Erdconch. p. 141. t. 1. f. 9.
Helix Stagnorum. Pult. Cat. Dorset. p. 49.
 Turbo glaber. Da Costa. p. 57. t. 5. f. 18.

H. with a smooth, glossy, pellucid, horn-coloured shell, with six spires very little rounded, and not much raised, but well defined by the separating line: *apex* rather obtuse: aperture oval; outer lip rather thick, but not

not margined or reflexed, and generally of a reddish-brown colour; inner lip replicated; no teeth, nor *umbilicus*. Length a quarter of an inch; breadth one third its length.

This species is not uncommon in moist woods, ditch banks, and shady places; especially under decayed wood, or timber that has lain some time on the ground; it seldom ascends the trunks of standing trees, or even the stalks of grass or other vegetables, but resides chiefly on the ground. Is at once distinguished, when alive, by its extreme glossiness; but dead shells frequently become white and opaque.

It was known to Doctor SOLANDER, and was probably first named by him *H. lubrica*, as he sent it to Mr. Boys under that denomination.

Animal dusky: *tentacula* four, clavate; eyes placed at the ends of the two longest.

Helix obscura. *Gmel. Syst.* p. 3661. 141.

Turt. Lin. iv. p. 539.

Muller Verm. ii. p. 103. No. 302.

Favan. t. 65. F.—*Walk. Min. Shells.* f. 41.

Turbo Rupium. *Da Costa* p. 90.—*Lijt. Angl.* t. 2. f. 8.

16.

OBSCURA.

H. with a sub-cylindric, sub-conic, opaque, brown, 'horn-coloured shell,' with from five to seven spires, somewhat

what rounded, and well defined by a deep separating line: volutions sub-striated, or rather wrinkled longitudinally: *apex* rather obtuse: aperture oval, marginated, white, reflexed; behind the pillar lip a groove or *sub-umbilicus*. Length three-eighths of an inch; breadth more than one third its length.

This species inhabits the same places as the preceding, especially moist woods; and frequently ascends the trunks of trees. It differs from that shell in being larger, not so lustrous, by its dull, opaque, brown colour, and wrinkles: and particularly by its white, marginated, and reflexed aperture.

We originally received this from Mr. BOYS, for WALKER's shell referred to, who says it is found at *Faversham*; the figure, however, given in the *Minute Shells*, is vastly too large, unless it is intended for a magnified engraving.

We have found it in a moist wood at *Lackham* in *Wiltshire*, on the trunks of smooth-barked trees, such as ash and hornbeam, not uncommon; and rarely in *Devonshire* in dry banks. It also affects high situations, for we observed them in considerable abundance, and of superior size, upon the top of the highest part of *Portland* island, under stones.

That it is not a common shell is certain, but must be considered as more local than rare, though it is by no means generally known.

If this should be LISTER's shell, of which there is very little doubt, we are informed it is found in the rocky parts, over the torrents about *Cravan* in *Yorkshire*. DA COSTA quotes the *Philosophical Transactions*, No. 105. fig. 8.---WALLACE *Ork.* p. 39.---and MORTON *North-amp.* p. 415. for his *Turbo. Rupium*; and it is probable they belong either to this, or to the *Helix lubrica*, but we are in doubt to which the synonyms should be placed.

The *obscura* in its young state, or before the mouth is formed, has much the appearance of a pyramidal *Trochus*. In this state we suspect SCHROETER in his *Erd-conchylien*, has described it, p. 141. tab. 1. fig. 8. and which MULLER afterwards described under the title of *Helix ventricosa*, p. 102. No. 301. and GMELIN p. 3661.

Animal pale-brown; beneath lighter: *tentacula* four; eyes placed at the tips of the two longest.



Helix subcylindrica. *Pult. Cat. Dorset.* p. 49.
Lin. Syst. p. 1248?
Gmel. Syst. p. 3652. 118?

17.
 SUBCYLINDRICA

H. with a cylindric, imperforated, sub-pellucid, light chestnut-coloured shell, with four spires, terminating in an obtuse, smooth, button-like whirl, as if truncated; the volutions a little rounded, and well defined by the separating line, furnished with close-set, rib-like, longitudinal striæ, in some the whole length; others principally

E e e

pally

pally apparent in the futures: aperture oval; outer lip thick, but not marginated; pillar lip replicated. Length a quarter of an inch; breadth one third its length.

On the authority of Doctor PULTENEY we have given this shell as *English*, who says it is found on water plants in rivers and ponds.

We cannot, however, help expressing some doubts that the Doctor has been deceived; as the specimens he favoured us with, appear to be a foreign variety of our *Turbo truncatus*, which is a marine shell; and from which it differs in nothing but being rather larger, of a deeper colour, and usually more strongly striated.

It is not uncommon amongst the smaller shells from the *West Indies*; but whether it is the *sub-cylindrica* of LINNÆUS, which is quoted by the Doctor, we are not quite clear.



18.

LACKHAMENSIS. H. with a sub-pellucid shell, of a dull, rusty-brown colour, wrinkled longitudinally: volutions seven, almost flat, but well defined by the separating line; the first three or four larger spires are sub-cylindrical, the rest more suddenly taper to an obtuse point: aperture sub-oval, marginated, reflexed, whitish, with frequently a purple tinge; inner lip scarcely thickened on the body,
the

the lower part reflecting much, forming a considerable linear cavity, or *sub-umbilicus*: no teeth. Length five-eighths of an inch, or rather more; breadth a quarter.

This shell sometimes varies to horn-colour, and cinereous, but most commonly of a rusty, or rufous-brown. It appears to be rare, or at least a very local, non-descript species.

We first found it in a moist wood at *Lackham* in *Wiltshire*, in one small spot only, adhering to the trunks of ash and hornbeam trees; and afterwards tolerably plentiful in the woods belonging to the Marquis of LANS-DOWN, at *Bow Wood*, in the same county, not very distant from the former place; and in no other part.

It seems to be a long time arriving at maturity, for scarce one out of ten has the mouth perfectly formed. In its infant state, when it has only four or five spires, it has much the appearance of a conic *Trochus*; and the aperture is somewhat quadrangular.

It has much the habit of *H. obscura*, but is more than double the size of that shell, and the exterior lip turns rather more outwards.

Animal pale, lightest beneath: *tentacula* four, clavate: eyes placed at the tips of the longest.

H. with a pellucid, horn-coloured shell, with seven or eight smooth, or very finely wrinkled, slender spires, gradually tapering to a fine point: the volutions are rather flat, but well defined by a considerable depressed line: aperture oval; outer lip very thin; pillar lip reflexed. Length above five-eighths of an inch; breadth two-tenths of an inch.

This is usually covered with a dusky-black *epidermis*, which wholly obscures the shell, and is very difficult to remove. It is a rare, or at least a very local species; and is probably the shell mentioned by Mr. PENNANT: but is not the *H. oclona* of LINNÆUS.

It is properly an aquatic species, but is probably somewhat amphibious, like *Helix fossaria*, preferring moisture at particular seasons, to actual fluid.

We have hitherto found it only in one part of *England*, a splashy place by the road side, half way between *Forwey* and *Looe* in *Cornwall*, where they were plentiful in all stages of growth: the young are less slender, and have only five or six volutions. Some of these we put into a glass of water, where they lived for some weeks, but generally crawled up the side, and seemed restless till they got out of that element, though continued to live when confined at the bottom: some put into wet
moss

moss lived a great while, others put in a dry place very soon died.

This is not the shell described by Doctor PULTENEY for the *H. octona* of PENNANT; his is the true *Linnæan octona*.

The Doctor favoured us with a specimen of his shell; and we think he must have been deceived with regard to its being *English*. It is a much more slender shell than this, terminates in an obtuse point, and the volutions are more rounded, and glossy white, or very light horn-colour. In the aperture too it is essentially different, being sub-orbicular; the pillar lip turns inwards at the base, and forms a contraction, nearly allied to the *Buccinum* genus; the length is five-eighths of an inch; and not more than one eighth broad at the base. CHEMNITZ seems to have figured this shell, vol. ix. tab 136. fig. 1264. and his description answers very well, but he does not quote the *H. octona* of LINNÆUS, but calls it, *Helix octona Indiæ occidentalis*.

We have also received it from the *West Indies*.

GMELIN quotes CHEMNITZ's figure for the *Linnæan octona*, which is not the least like our shell: and also a minute shell given by SCHROETER in his *Flussconchylien* tab. 8. fig. 6. which is undoubtedly the *Buccinum terrestre* of this work, and not at all like either.

Animal

Animal dusky, with two short flat *tentacula*, at the base of which the eyes are placed.



20.
POLITA.

Helix polita.	<i>Pult. Cat. Dorset.</i> p. 49.
Turbo politus.	<i>Gmel. Syst.</i> p. 3612. <i>Turt. Lin.</i> iv. p. 501.
Turbo lævis.	<i>Br. Zool.</i> No. 115. t. 79. (upper fig.) <i>Turt. Lin.</i> iv. p. 497.
Strombiformis glaber.	<i>Da Costa</i> p. 117.
Smooth white whelk.	<i>Borlase Cornwall</i> p. 277. ?

H. with a strong, white, and extremely glossy shell, perfectly smooth, without wrinkles or striæ: volutions from nine to thirteen, depending on age and size; quite flat, and scarcely defined by any separating line; slender, and gradually tapering to a sharp point: aperture oval, forming an acute angle, or contraction, at the upper end; outer lip rather thick, but not margined, or reflexed; inner lip replicated. Length five-eighths of an inch, usually less; breadth two-tenths of an inch.

This species is found rarely on the western shores; DA COSTA says *Exmouth* in *Devonshire*; and Doctor PULTENEY speaks of it in *Dorsetshire*, but not common.

We have found it sparingly in *Cornwall* and *Devonshire*, the largest of which was taken from the stomach of an *Actinea pedunculata*: minute specimens are sometimes found on *Oysters* and *Scallops*. In this infant state they

they are of exquisite polish, and when the animal is alive, frequently appear mottled with pink and pale-green: are also somewhat arcuated, and very seldom found perfectly straight.



H. with a slender, white shell, with eight or nine DECUSSATA.
 spires tapering to a fine point; volutions very little Tab. 15. f. 7.
 raised, and the separating line extremely fine; these are
 strongly, and regularly striated in a longitudinal direction,
 crossed by very minute striæ, that gives it a slight
 decussated appearance, when examined by a lens: aperture
 narrow, suboval, contracted at both ends; outer
 lip somewhat expanded, and a little thickened at the
 back; inner lip a trifle replicated. Length three-tenths
 of an inch; breadth one tenth.

In shape this shell is similar to *Helix polita*, except in the aperture, which stands rather more oblique, the outer lip more expanded in the middle, and contracted at the lower angle.

We have been favoured with this new and elegant species more than once, by Mr. BRYER of *Weymouth*, accompanied with an assurance, that he found them at different times, on the shore, between that place and *Portland* island.

22. Tab. 13. f. 7.	Turbo costatus.	<i>Pult. Cat. Dorset.</i> p. 45.
	Turbo albus.	<i>Br. Zool.</i> No. 114. t. 79? <i>Turt. Lin.</i> iv. p. 497?
	Turbo membranaceus.	<i>Lin. Trans.</i> v. p. 2. t. 1. f. 14. 15. (Adams)— <i>Turt. Lin.</i> iv. p. 500.
	Strombiformis albus.	<i>Da Costa.</i> p. 116?

H. with a sub-conic, sub-pellucid, light horn-coloured shell, with seven, and rarely eight, flattish spires, terminating in a fine point, and furnished with from fifteen to eighteen faint ribs, on the three largest whirls; the superior volutions smooth: *apex* frequently purplish: aperture oval, lips thickened within, white; the margin of the outer lip thin, a little reflexed, and usually of a purplish-brown; the back of the outer lip a little gibbous, and generally whiter than the rest of the shell: pillar lip spreads considerably on the body whirl; *Columella* within undulated, forming a small elevation, like an obsolete tooth.

The aperture is a strong character; it is nearly half the shell, and consequently makes the body volution proportionally large; it stands a little oblique, considerably expanded at the margin, which is reflexed, and is contracted in the throat by the thickening of the shell.

A variety is much more thin and pellucid, some quite destitute of ribs; others only partially ribbed on the upper part of one or two of the largest volutions; these are frequently streaked longitudinally with brown, sometimes

times in an undulated manner: such are usually larger, and not so thick in the lips, but the margin of the aperture is equally repand.

It is observable in all these shells, the back of the body volution is invariably destitute of ribs, and the inside of the mouth in fresh shells, extremely glossy: the spires too, are very little raised, and the line of separation very fine, which in worn shells, scarce mark them: such are frequently found quite white. Live specimens are covered with a yellowish-brown *epidermis*.

Length rather more than a quarter of an inch; breadth nearly one half its length.

This species is not uncommon in *Cornwall*, particularly about *Falmouth*; and is equally plentiful on the south coast of *Devonshire*, and *Dorsetshire*; and the smooth variety at *Southampton*. Have also found it more sparingly, about *Biddeford* in the north of *Devon*, and on the south coast of *Wales*.

In our communications with our late worthy friend DOCTOR PULTENEY, we sent him this shell, which he acknowledged to be his *Turbo costatus*, and consequently clearly proved that he had fallen into an error, in quoting the *Turbo parvus* of DA COSTA: possibly, however, he has been right in quoting *Strombiformis albus* of the same author, for we find he was not singular in

that opinion, as this shell is not uncommonly considered as such, by collectors.

It was figured in *Triton Britannicus*,* where we observed that name affixed to it, and which the Doctor also refers to.

In quoting DA COSTA we confess, it is more from popular opinion than from our own, if his description is to be attended to: the smooth variety of this shell is, indeed, when worn and bleached, milk white, glossy, and the spires are nearly level, or not prominent beyond one another, only separated by a slight furrow. To this part, therefore, of DA COSTA's description it would in that state somewhat accord; but we cannot conceive, how it could be placed in the genus *Strombiformis*, or *Needle Snails*, of that author, the characters of which are "very long, slender, and taper in shape." In his specific description, however, he says, "of a taper shape, "not slender, but very swelled, or bodied."

The *Turbo membranaceus* of Mr. ADAMS, we have very little doubt, is the lineated variety of this shell, which is not unfrequently met with, exactly corresponding with the description given by that gentleman, except in the number of spires, which is known to vary with age:

* An intended work on Conchology with this title, never appeared before the public: Doctor PULTENEY quotes it as a M. S. and informs us, it is a new impression of DA COSTA's plates, with seven additional tables.

age: his figure is much too slender, an error his draftsman has not unusually fallen into, in those representing the natural size.

H. with a strong, conic, opaque, dark, purplish-brown PETREA. shell, with five spires; the first large, occupying nearly two-thirds of the length; the superior ones small: *apex* sharp, pointed: the volutions are very little raised, but sufficiently defined by the separating line, which, in the future of the body whirl, rises upon the base of the superior volution, with a slight, abrupt, ragged edge, and does not turn inwards and become lost, as is usual with most shells, at the junction of the spires: it has no regular striæ, but is wrought with faint, irregular wrinkles, across the volutions, which, in the under part of the body, above the mouth, is worn quite plain: aperture lunated; outer lip considerably projecting, margin attenuated; pillar lip smooth, flat, and partly spread upon the body whirl, in a diagonal line, the whole length of the aperture; this, as well as the inside, and the *operculum*, (which is of a corneous substance,) is of a deep, glossy purple: the inner lip is straight, and brought to an edge, as in many of the *Nerites*, but the mouth does not stand sufficiently transverse to claim a place in that genus; and, indeed, the *apex* is more produced than is usual in that tribe. Length rather more than a quarter of an inch, but never so much as three-eighths, of which

the aperture extends full one half; breadth two-tenths of an inch.

A variety is irregularly streaked, or blotched with rufous, or white, on the upper part of the larger volution, but the smooth part of the pillar lip, and inside, are invariably of the same dark-purple colour.

This species, which at present appears to be a non-descript, may possibly have been confounded for the fry of some of the larger littoral shells; though, on close examination, will be found to be essentially different from any *British* species, hitherto noticed; the mouth, alone, being a strong specific mark of distinction; and if attentively examined, will always prove an unerring guide.

We have, as yet, only met with it on the south coast of *Devon*, near the mouth of the river *Aun*, not far from the village of *Bantum*, adhering to the rocks, a little beneath high water-mark; and there in no inconsiderable abundance: and less plentiful in a similar situation at *Swanage* in *Dorsetshire*.

Upon a cursory view, it may be mistaken for *Turbo tenebrosus*, being nearly the same size, and colour; the shape, however, is not only very different, but the smallest attention to the aperture, and a comparison of the description of each, will prevent their being confounded.

**SUB-GLOBOSE, OR DEPRESSED; APEX PRODUCED.

- Helix Pomatia. *Lin. Syst.* p. 1244.—*Gmel. Syst.* p. 3627. *Pomatia*.
Chem. Conch. ix. t. 123. f. 1138.
Id. ix. t. 108. f. 908. to 912. var. reversed.
Lister Conch. t. 48. f. 46.—*Id. Angl.* t. 2. f. 1.
Br. Zool. t. 84. f. 128.—*Gualt.* t. 1. A.B.C.
Schroeter Erdconch. p. 145. t. 1. f. 10.
Da Costa. p. 67. t. 4. f. 14.
Favon. t. 63. D. 1?—E. var. reversed.
Hill Swammerd. p. 65. t. 4. f. 2. 3.
Pult. Cat. Dorset. p. 47.
Turt. Lin. iv. p. 513.
Don. Br. Shells. iii. t. 84.
Muller Verm. ii. p. 43. No. 243.
 Helix Pomaria. *Muller Verm.* ii. p. 45. No. 244. var. reversed

H. with a sub-globose, moderately strong, sub-pellucid shell, with five rounded volutions, strongly wrinkled longitudinally: colour yellowish-brown, commonly with three faint *fasciæ* on the body, one of which continues round the second spire: aperture semi-lunated, margin rather thickened, and turns a little outwards; pillar lip much reflected over the *umbilicus*. Diameter about two inches.

This is the largest species of land shells, found in *England*; is subject, like the common garden snail, to much variety in colour; some are nearly white, with scarce

scarce any appearance of bands. It is not an aboriginal species of this kingdom, but was first introduced about the middle of the sixteenth century, either as an article of food, or for medicinal purposes. Is supposed they were first imported from *Italy*, and turned out in *Surry*, by a Mr. HOWARD at *Albury*; where they encreased prodigiously, and are by far the most common species about *Ashted*, *Boxhill*, *Leatherhead*, *Darling*, and the neighbouring parts.

It is also said that Sir KENELM DIGBY dispersed them about *Gothurst*, near *Newport Pagnal*, in *Buckinghamshire*, where they did not thrive much. Mr. MORTON informs us, some were turned out by Lord HATTON at *Kerby* in *Northamptonshire*, but that they did not encrease.

They are commonly used as food in many parts of *Europe*, especially during Lent; and are preserved and fattened for that purpose; but we do not find they grow to that size spoken of by VARRO, who says the shells would hold ten quarts. They were a favourite dish with the *Romans*, who had their *Cochlearia*, or nursery, and fattened them (as we are told) with bran and fodden wine.

It has been found according to DA COSTA, in *Oxfordshire*, about *Woodstock* and *Blanden*: in *Gloucestershire* about the parish of *Chedworth*; and in *Dorsetshire*.

Doctor

Doct^r PULTENEY, however, observes he never found it in this last county. Doct^r LISTER says in *Hertfordshire*, about *Ware* and *Puckeridge*.

We have received it from *Kent*; and once found a single specimen near *Devizes*, in *Wiltshire*; which, with those mentioned in *Gloucestershire*, seems to be their furthest northern limits at present.

By some, it is said to possess a testaceous *operculum*; if so, it is only prepared for security in the torpid season, and is cast off as soon as the animal is restored to locomotion: for no such appendage is to be discovered during the summer months.

Most authors, however, speak of the *operculum* as like chalk or plaster; and that it is composed of two or three *laminæ* of different degrees of hardness; but not testaceous. That it is not of a shelly nature, there can be no doubt, for in all such shells, furnished with a testaceous *operculum*, it is as much fixed to the animal as any other part, and is never deciduous; whereas, the animal of the *Helix Pomatia*, throws off the covering of the aperture of its shell, as soon as it issues from its *hibernaculum*.

Helix aspersa. *Gmel. Syst.* p. 3631. 58.

Müller Verm. ii. p. 59. No. 253.

25.

ASPERSA.

Helix

- Helix aspersa.* *Chem. Conch.* ix. t. 130. f. 1156. 1158.
Lijfer Conch. t. 49. f. 47.—*Id. Angl.* t. 2. f. 2.
Petiv. Gaz. t. 65. f. 4—*Turt. Lin.* iv. p. 515.
Ferri. t. 63. D. 2. 3. 4.
Den. Br. Shells. iv. t. 131.
- Helix hortensis.* *Br. Zool.* t. 84. f. 129.
Turt. Lin. iv. p. 529.
Nat. Mijcel. t. 30.
- Helix Lucorum.* *Pult. Cat. Dorset.* p. 48.
- Cochlea vulgaris.* *Da Costa.* p. 72. t. 4. f. 1.

H. with a sub-globose shell, with four volutions, the superior ones placed somewhat laterally: aperture femi-lunar, rather elongated, margin reflected, white: no *umbilicus*. Diameter scarce an inch and a half.

It varies much in colour and markings, but is usually white, with *fasciæ* of dark brown, which are frequently broken, and appear mottled all over, with purplish-brown and white; some are entirely of a dull yellow-brown, without *fasciæ* or streaks.

An accidental variety, with the volutions turning the contrary way, was found by Doctor LATHAM at *Dartford*: and we observed in the cabinet of Mr. SWAINSON, another variety, with the volutions vastly extended and detached, in a singular spiral form, like a screw.

At the approach of winter, the animal forms a covering to the aperture, or an *operculum* of a coriaceous substance, composed of many coats or folds; which it
retains

retains during its torpid state; but is thrown off on the return of summer, as soon as its locomotive faculty is restored.

It may be expected in the history of this animal, so long celebrated for acting the part of Cupid in its amours, that something should be said upon a subject so singular and extraordinary.

So much, however, has been already written by different authors on the loves of *Snails*, which requires more than common faith to credit; that we must beg to refer our curious readers to the more recent accounts of the actions of *Snails* in love, given in the first volume of the *Naturalist's Miscellany*; where the author very properly prepares the reader for the belief of such wonders, by saying, "I must request my readers to summon all their philosophical faith to receive the surprising particulars."

That the hermaphroditical animal of the *Helix aspersa*, as well as *H. nemoralis*, (or at least some of them,) possess small testaceous *spiculi* at certain seasons, must be admitted; but that they are missile darts, we have much reason to doubt, though it is natural to suppose the animals are furnished with them, for the purpose of stimulating each other to love, because it is only at that season they are found to possess them. If such are ever discharged at each other, we have been extremely unfortunate in our observations, for in no one instance, could

we ever find the dart penetrated; though at the time the animals are close, the point may irritate: but it is neither sufficiently strong, nor sharp-pointed, to penetrate the tough skin with which these animals are furnished; and, indeed, the extremely viscid secretion, with which they are so copiously provided, adheres so strongly to these *spiculi*, when wholly projected from the body, that they are for a time held by it. Perhaps we may be told hereafter, that this tough excretory fluid is used as a cord to regain these darts after they have been discharged: but such we should hold equally fabulous, with much of the accounts related by various authors.

These celebrated love-darts are sub-pellucid-white, and very brittle, about a quarter of an inch, or three-eighths in length, and somewhat triangular, like the blade of a small sword.

Some authors seem to have considered this as the *Helix Lucorum* of LINNÆUS, but it certainly admits of much doubt. GMELIN did not think so, for he has given all the synonyms of this shell to his *H. aspersa*; and has made his *H. Lucorum* a very different shell; a figure of which is given in LISTER'S *Conchology*, tab. 1058. fig. 1.

DOCTOR TURTON has confounded the synonyms of the *aspersa* with those of the *hortensis*, not considering the former as an *English* shell, and therefore has quoted this
shell

shell of LISTER, PENNANT, and DA COSTA, for the
hortensis.

26.

- Melix nemoralis*. *Lin. Syst.* p. 1247.—*Gmel. Syst.* p. 3647. NEMORALIS.
Chem. Conch. ix. t. 133. f. 1196. 1198.
Id. t. 109. f. 924. var. reversed.
Lister Conch. t. 57. f. 54.
Id. Angl. p. 117. var. 2. to 9. t. 2. f. 3.
Br. Zool. No. 131.—*Favan.* t. 63. H.
Don. Br. Shells. i. t. 13.
Born. p. 334. 385. t. 16. f. 3. 8.
Muller Verm. ii. No. 246. p. 46.
Hill Swammerd. p. 70. t. 8. f. 5.
Pult. Cat. Dorset. p. 48.
Turt. Lin. iv. p. 529.
Petiv. Gaz. t. 91. f. 9. to 12.—*Id.* t. 92.
f. 9. 10.—*Gualt.* t. 1. P.&Q. left hand.
Schroeter Erdconch. t. 1. f. 13. to 17.—t. 2.
f. 28. 29. 30.

Cochlea fasciata. *Da Costa.* p. 76. t. 5. f. 1. 2. 3. 4. 8. 14. 19.

H. with a sub-globose, sub-pellucid shell, with five volutions of various colours; most frequently yellow, or reddish, fasciated with dark chocolate-brown, from one to five in number on the body, but rarely two; those with five bands have the two uppermost much smaller than the rest. In some the *fasciæ* are very broad; others have a single narrow zone throughout the volutions, on a bright yellow ground; sometimes plain yellow, red, or dull purplish-brown; but in all varieties the

G g g 2

inner

inner margin of the lip, the edge, and pillar lip are invariably of a dark colour.

The aperture is lunated; base imperforated. Greatest diameter not quite an inch.

This is one of the most common species in our woods, hedges, and shady places.

We have observed similar *spiculi*, or amorous darts, to those of *Helix aspersa*, issuing from this species, in the month of May.



27.

HORTENSIS.

Helix hortensis. *Gmel. Syst.* p. 3649. 109.

Cham. Conch. ix. t. 133. f. 1199. 1201.

Mul. Verm. p. 52. No. 247.

Lister Angl. p. 117. No. 1.

Born. p. 385. t. 16. f. 18. 19.

Gualt. t. 1. Q. right hand.

Schroeter Erdconch. t. 2. f. 27.

H. with the shell in every respect like the preceding species, but considerably less, and invariably with a white margin to the aperture. It is subject to nearly all the varieties of the *H. nemoralis*, except that of red, or flesh-colour. Greatest diameter three-quarters of an inch.

Various have been the opinions concerning this shell; MULLER and BORN have considered it as quite distinct from

from the *H. nemoralis*, and have given the white lip as an invariable character.

GMELIN and CHEMNITZ have expressed a doubt.

To this subject we have paid considerable attention, by collecting these shells from different parts of the kingdom; and have invariably found the smaller shells with the white lip, and the larger with a brown margin to that part; and have never yet found the red or flesh-coloured variety with the former. It has been conjectured, that this shell is only the young of the other, but the perfect formed mouth precludes all such idea: it is also much less common, which would not be the case if it was the young of the *nemoralis*, and the red variety would equally occur. From these circumstances we are inclined to believe, they are perfectly distinct.

That they are full grown shells is evident from the structure of the lip; for the *nemoralis* is larger before the lip is formed: and we cannot think it an accidental variety in a depauperated state, because neither of their mouths ever vary.



28.

Helix Arbusorum. *Lin. Syst.* p. 1245—*Gmel. Syst.* p. 3630. 53. ARBUSTORUM.
Chem. Conch. ix. t. 133. f. 1202.
Muller Verm. ii. p. 55. No. 243.
Lijter Conch. t. 56. f. 53.
Id. Angl. t. 2. f. 4.

Helix

Helix Arbusflorum. *Br. Zool.* t. 85. f. 130.

Don. Br. Shells. iv. t. 136.

Pult. Cat. Dorset. p. 47.

Turt. Lin. iv. p. 514.

Cochlea unifasciata. *Da Costa,* p. 75. t. 17. f. 6.

H. with a sub-globose, sub-pellucid shell, with five volutions a little rounded, well defined by the separating line, and wrinkled longitudinally: colour usually mottled cinereous, and brown in streaks, and lines; some pale, inclining to yellow; others dark, approaching to chestnut, with most commonly a single band of brown about the middle of the body, continuing spirally at the base of the superior volutions, and is gradually lost before it reaches the *apex*. This single belt or *fascia* has been considered as the strong character of the shell; however, it is frequently destitute of that mark, and is oftentimes so faint as scarcely to be traced; the mottled appearance, therefore, is the most constant and unerring character: aperture lunated, margin reflexed, the inside bordered with white; in young shells a *sub-umbilicus* is observable, which is concealed by the reflected lip in old ones, when the aperture is completely formed. Greatest diameter about three-quarters of an inch.

This species may be considered as very local, but sufficiently plentiful in some parts. It delights in wet, and shady places, particularly amongst willows and alders, where the soil is black and boggy. In such places in the neighbourhood of *Lackham* in *Wiltshire*, contiguous to
the

the river *Avon*, it is the most common shell, but we have rarely found it elsewhere.

DA COSTA observes it is not a common species, but says he has seen them from *Surry*, *Hampshire*, and *Wiltshire*.

DOCTOR PULTENEY remarks it is not common in *Dorsetshire*.

We once received a single specimen from the north of *Devonshire*.

Animal dusky, *tentacula* four, superior ones moderately long, with the eyes at their tips.



Helix virgata. *Pult. Cat. Dorset.* p. 47.

Petiv. Gaz. t. 17. f. 6.

Gualt. t. 2. L. M. P.

Lister Conch. t. 59. f. 56.

Cochlea virgata. *Da Costa* p. 79. t. 4. f. 7.

Helix zonaria. *Don Br. Shells* ii. t. 65.

Br. Zool. t. 85. f. 133. A. (var.)

Helix Pisana. *Muller Verm.* ii. p. 60. No. 255.

Gmel. Syst. p. 3631.

Schroet. Erdconch. p. 188. t. 2. f. 22. & 22. a.

22.

VIRGATA.

H. with a sub-globose, sub-pellucid shell, with six considerably produced, and rounded volutions: colour white, tinged with blush, with one dark purplish-brown band

band on the middle of the body, continuing spirally at the base of the superior volutions quite to the *apex*, which is prominent; at the base there are usually three or four fine circular lines of the same colour; these are sometimes confluent, and the white part appears between in spots; others have two or three broader, circular bands at the base; none of these, however, run close to the *umbilicus*, which is deep but not large: aperture lunated, lip thin, and not reflexed, except at the part close to the *umbilicus*; within pale purplish-brown, with a white, thread-like elevation round the margin.

A variety is not uncommon, of a plain rufous-brown colour, with sometimes a dash of cinereous, obsoletely banded at the base, or with a single white *fascia* on the body; others wholly of a flesh-coloured white, with a white belt on the lower volution. Length generally half an inch; breadth the same; but we have received it from *Kent*, full five-eighths of an inch diameter.

This and the following species have been confounded together; DA COSTA and others have considered it as the *Helix zonaria* of LINNÆUS, to which we cannot assent, though GMELIN has quoted DA COSTA's shell for his *zonaria*.

Nor is it the *zonaria* of PENNANT; that author was not acquainted with this shell, except the plain variety quoted.

Mr. DON-

Mr. DONOVAN informs us, that DA COSTA was not possessed of PENNANT'S shell till after his work was published, and that this mistake stands corrected in some of his M. S. notes.

This author, however, considers the *H. virgata* to be the *H. zonaria* of LINNÆUS, as he says, GMELIN admits DA COSTA'S shell to be the *Linnæan zonaria*. However this may be, that author has quoted other shells perfectly distinct, and not the least allied to this.

DOCTOR PULTENEY, who gives this as a *Dorsetshire* shell, expressly says, "not *zonaria* of LINNÆUS;" and we are much inclined to coincide with the Doctor.

The *virgata* may be considered as a local species, but is found in prodigious abundance in some sandy, or barren stony situations. Most plentiful near the coast, especially about *Whitſand* bay in *Cornwall*, and in the south of *Devonshire*; where it is a prevailing opinion, they contribute not a little to fatten sheep; the ground in some places being covered with them. It is also found in the more interior counties; is not uncommon in *Wiltshire*; but no where in such abundance as within the influence of saline air. Is the most common species about *Kingsbridge* in *Devonshire*, and on the coast to the east and west of that place, in company with *Turbo fasciatus*. PETIVER noticed it on *Newmarket* heath, near *Cambridge*.

Animal of a pale colour, not much unlike that of the following species.



30.

CINGENDA.

Helix zonaria. *Br. Zool.* t. 85. f. 133.

Gault. t. 2. H.—t. 3. C?

H. with a sub-pellucid shell, with somewhat the habit of the preceding: it has five volutions, the larger ones rounded, but are a little angulated, or flattened at the top; the three superior spires are very little elevated above the rest: *apex* obtuse and depressed: colour yellowish-white, with several small bands of chestnut, or purplish-brown, running spirally up the shell, which are frequently broken, and form short longitudinal streaks, especially on the flat, or angulated part, on the top of each spire; the base is slightly umbilicated, and has generally one broad circular band, at some distance from the *umbilicus*, and a broad white belt between that and the finer girdles, which are sometimes as many as seven or eight, perfectly distinct, but frequently run into each other: some have two circular bands at the base, close together. The spiral belt usually becomes faint, and frequently quite lost in the upper volutions; but the *apex* is commonly defined by a black spiral line.

A variety is sometimes found quite plain, or with only a few faint girdles on the body. Aperture lunated, margin attenuated, not reflexed, except close to the *umbilicus*, where it turns considerably outward, and partly overlaps

overlaps the perforation. Breadth at the base three-quarters of an inch; height half an inch.

This species differs essentially from *Helix virgata* both in shape and markings; it is larger, broader in proportion to its height, and depressed on the top; whereas that shell has always a produced *apex*, and never more than one belt on the superior volutions.

Mr. PENNANT has given a very good figure of this shell, which he describes to be fasciated spirally with narrow stripes of white, dusky, and yellow. Such are not uncommon, and is by far, the most elegant variety.

This must be considered as one of our most rare species, or at least extremely local: the only place we ever found it in, was on the rocks that verge the town of *Tenby* on the south, close to the sea; and on the sands to the west of that place, contiguous to the shore: in these places we observed it twelve years ago, and lately procured specimens from the same spots: it seems confined to a small district, as we could not find it elsewhere in the neighbouring country.

Mr. RACKETT informed us, he found it near *St. Ives* in *Cornwall*, on the slope of the hill descending to the town. Mr. PENNANT has quoted the *H. zonaria* of LINNÆUS for his shell; but we do not think the description sufficiently corresponds, to consider it as such.

GMELIN makes the *virgata* of DA COSTA, his *zonaria*; but we think he has mistaken the species, for neither of the shells here described, have a reflexed margin to the aperture, which seems to be the character of the *Linnaean* species.

It has also been thought by some, that this is the *H. maculosa* of LINNÆUS, but the same objection holds against its being that shell.

Animal pale-yellow: *tentacula* four, the longest darker than the body, with a dusky streak at the base of each, running backward, and furnished with eyes at their tips: *sustentaculum* longer than the shell.

31.

RUFESCENS.

- Helix rufescens.* *Br. Zool.* t. 85. f. 127.
Lister Conch. t. 71.—*Id. Angl.* t. 2. f. 12.
Pult. Cat. Dorset. p. 47.
- Cochlea rufescens.* *Da Costa.* p. 80. t. 4. f. 6.
- Helix fericea.* *Muller Verm.* ii. p. 62. No. 258?
Gmel. Syst. p. 3617?
- Helix Turturum.* *Turt. Lin.* iv. p. 521?
Gmel. Syst. p. 3639?
- Helix hispida.* *Turt. Lin.* iv. p. 512.
- Helix obvoluta* *b* *Muller Verm.* ii. p. 27. No. 229?
Schroeter Erdconch. p. 194. t. 2. f. 24?

H. with a sub-pellucid, rufous-brown shell, with six volutions not much raised, but well defined by the separating
 rating

rating line, and striated, or rather wrinkled longitudinally: shape in general, considerably compressed, and the *apex* very little elevated, so that its height is not above half the breadth. Sometimes it is two-thirds as high as it is broad, and the *apex* more produced: on the middle of the lower volution is a slight, sub-carinated edge, which is more strongly marked by being of a lighter colour like a band: aperture semi-lunated, outer lip thin, a little reflected at the lower angle: *umbilicus* large and deep. Diameter at the base, half an inch.

This shell sometimes appears a little mottled when the animal is alive, especially in the lighter coloured varieties: some are quite pale, others of a deep orange-brown.

The young of this species are frequently hirsute, or covered with short hairs; in which state it has been confounded and described for *Helix hispida*; and we suspect is the *H. tomentosus* of Mr. ADAMS, *Linnæan Transactions*, vol. iii. p. 254. and of TURTON'S LINNÆUS, iv. p. 525.

It is, however, readily distinguished in that state from the *hispida*, by its more compressed shape, in being more opaque, and by the *umbilicus*, which is much larger: the hairs too, are shorter, and seldom spread all over the shell. This hispid appearance wears off before they are half grown. The animal of this is dusky, that of the other light coloured; both have four *tentacula*, and eyes placed at the tips of the longest.

It

It is a common species in most parts of *England*, in moist woods, and shady places.



CANTIANA.

H. with a sub-pellucid shell, with much the habit of the preceding; it has the same number of volutions, is equally compressed, but of a much superior size, and has not the sub-carinated edge, though a faint white band is frequently to be traced on that part: the colour too is lighter, with a blueish, or lead-coloured tinge, on the superior volutions, produced by the dark colour of the animal; the base and round the mouth rufous. The aperture is like that shell, but the *umbilicus* is less in proportion. Diameter at the base above three-quarters of an inch; height half an inch.

This is probably the shell DOCTOR LISTER mentions as a variety of the *H. rufescens*, which he speaks of as being found in *Kent*, and says it is larger, lighter coloured, and with a smaller *umbilicus*. There is no doubt, however, of its being a distinct species, and very local, having never obtained it from any part but *Kent*, where it is found chiefly upon the chalky soil.

We have received it from our much esteemed friend Mr. BOYS of *Sandwich*, by the name *rufescens cantiana*, by which, we have been informed, it was known in the *Portland* cabinet.

- Helix hispida*. *Lin. Syst.* p. 1244.—*Gmel. Syst.* p. 3625. 42. **HISPIDA.**
Chem. Conch. ix. t. 122. f. 1057. 1058.
Muller Verm. ii. p. 73. No. 268.
Petiv. Gaz. t. 93. f. 13. 14.
Morton Northamp. p. 416 ?
Da Costa. p. 58. t. 5. f. 10.
Pult. Cat. Dorset. p. 47.
Schroeter Erdconch. p. 186. t. 2. f. 21.

H. with a sub-globose, thin, fragile, diaphanous shell, with five rounded volutions of a very light horn-colour, covered with fine, thick-set, short, downy, whitish hairs; aperture lunated; lip thin, not reflected, except at the angle close to the *umbilicus*, where it turns back, and partly surrounds the perforation: base rounded: *umbilicus* very small, and round.

This species seldom much exceeds a quarter of an inch in breadth, and something less in height; is so remarkably light, and so covered with hairs, that when let fall upon a hard body is scarce heard.

It appears to be a very local shell, having found it only about *Tremough* house, near *Penryn* in *Cornwall*, where it is tolerably plentiful: and sparingly in *Devonshire* and *Wiltshire*. *DA COSTA* speaks of it from the last mentioned county, as well as from *Hampshire* and *Lincolnshire*.

DOCTOR *PULTENEY* says, it is common in *Dorsetshire* in woods, among moss, and in wet and shady places.

We

We are inclined to believe the Doctor, as well as others, have confounded this with the young of the *H. rufescens*, which is frequently hirsute, and not uncommonly placed in cabinets for this species; but we before remarked in the description of that shell, that the shape and *umbilicus* are very different. This, too, is never of that rufous colour, which DA COSTA has unfortunately given to his shell; his description, however, in every other respect is very good.



34.

FUSCA.

Tab. 15. f. 1.

H. with a thin, pellucid, rufous horn-coloured shell, with five or six volutions, almost smooth, or very faintly wrinkled longitudinally: aperture lunated, lip thin, not reflected, except a little at the lower angle; at which part is a small depression, but no *umbilicus*.

This has much the habit of *H. rufescens*, but is more pellucid, not so much wrinkled, and is at once distinguished by not having any *umbilicus*.

We were favoured with this species from Mr. BOYS of *Sandwich*, who informed us, it was known about *London* by the name prefixed. It seems, however, to be a rare species, very little known, and not described by any one.

It rarely exceeds three-eighths of an inch in diameter at the base, and is not a quarter of an inch in height.

We

We once found it in a wood in *Devonshire*; this was so uncommonly thin (though not of an inferior size) that as the animal dried, the shell contracted with it into depressions.



35.

- Helix lucida.* *Pult. Cat. Dorset.* p. 47.—*Gualt.* t. 2. G. LUCIDA.
Helix nitens. *Gmel. Syst.* p. 3633. 66.
Turt. Lin. iv. p. 516.
Chem. Conch. t. 127. f. 1130. 1131.
Helix pellucida. *Br. Zool.* No. 134?
Helix nitida. *Muller Verm.* p. 32. No. 234.
Petiv. Gaz. t. 93. f. 14:
Schroeter Flussconch. t. 5. f. 32. 33.

H. with a smooth, glossy, thin, pellucid, horn-coloured shell, with five, and sometimes six volutions, the lower one rounded, the rest almost flat and depressed, or very little raised above the body whirl: the base is of a lighter colour, more opaque, and has frequently a faint tinge of green: *umbilicus* large and deep: aperture lunated, margin thin, and not the least reflected. Diameter at the base usually three-eighths of an inch, sometimes half an inch; height not above two-tenths.

This is not an uncommon species, is found in many parts of *England*, in moist woods, as well as in dry banks.

We have found a shell inhabiting wet places, and once alive under water, so much like this, that we dare not

give it a distinct place, though we are much inclined to believe it a different species. It is more pellucid, the *apex* more produced, and never has that opaque greenish colour at the base: that found under water (which we take to be SCHROETER's fig. 32) was of a light, transparent horn-colour. Others, taken in wet drains and ditches about *Newbury* in *Berkshire*, are of a rufous horn-colour, (which is probably SCHROETER's fig. 33): the animal is black, and when alive, gives the shell a deep chocolate-brown colour. This last we have also found on a swamp, in a wood belonging to Lord CLIFFORD in *Devonshire*, rather lighter in colour.

We are aware that the colour of shells is somewhat affected by the soil, at least such as live in moist or watery places: those found at *Newbury* are doubtless of a darker colour, from partaking of the soil, which is peat.

This last never exceeds a quarter of an inch in breadth. That found under water, was crawling upon brooklime, and was considerably larger: it was in a water-course, or drain to a swamp, near *Penzance* in *Cornwall*. These, however, appear from their shape to be the same, but whether they are really distinct from the *lucida*, or only varieties, the observations of future conchologists must determine. We do not recollect, whether the animal of that we found under water, was of the true aquatic kind, or whether it possessed four re-

tracils.

tractile *tentacula*, and had by accident fallen into that element; but we never before or since, found one so large, so extremely thin and pellucid, or of so light a colour. The animal of this is dusky above; *tentacula* four, of the same colour, cylindric, a little clavate at the end, the longest furnished with eyes at their tips.



Trochus terrestris, Listeri. *Da Costa* p. 35.

Lister Angl. p. 123.

Phil. Trans. No. 105. f. 9?

Helix Trochulus.

Muller Verm. p. 79. No. 276.

35.

TROCHIFORMIS.

Tab. 11. f. 9.

H. with a thin, pellucid, horn-coloured shell, sometimes inclining to rufous; with six rounded volutions, nearly smooth, and glossy, strongly divided by the separating line: *apex* considerably produced: base a little rounded: aperture sub-lunated, transversely compressed; lip attenuated, in old shells a little reflected at the lower angle, forming a *sub-umbilicus*, scarce distinguishable in young specimens, though most times a little concave in the centre of the base. Length about one-eighth of an inch; breadth nearly the same.

This species has much the habit of a *Trochus*, but the lunated mouth forbids its being placed in that genus. It is a rare shell; we first observed dead specimens amongst the drifted sand in the river *Avon* in *Wiltshire*; and afterwards found it sparingly, alive, in *Lackham* wood, in the same county; and also in a wood close to Lord CLIFFORD'S house in *Devonshire*.

It seems partial to moist situations, and is generally found on decayed wood, or timber that has lain some time on the ground.

Mr. SWAINSON has this shell in his cabinet; and, we believe, said he found it in *Kent*.

Animal light coloured, paler beneath; *tentacula* four, the superior ones not very long, furnished with eyes at their tips.



57.

LACUNA.

Tab. 13. f. 6.

H. with a thin, pellucid; sub-globose shell, of a light horn-colour, with four tumid, smooth spires, the first large, the two uppermost very small, and placed somewhat lateral: aperture large, sub-oval; outer lip extremely thin, membranaceous; pillar lip thick, white, grooved with a long canal or gutter, which terminates in a small, but deep *umbilicus*. Length a quarter of an inch; breadth nearly the same.

The form of the pillar lip, and the lateral situation of the smaller volutions, give this shell much the habit of a *Nerita*; but the shape of the mouth makes it a *Helix*. It must not therefore be confounded with the *Nerita pallidula*, whose pillar lip is some what of the same form, but much broader; the smaller volutions more lateral, and more compressed: the body, and mouth too, are vastly larger.

We

We never found this species any where but on the coast of *Devonshire* sparingly, and on the shore near *Southampton*, where it is plentiful about high water-mark, but most frequently dead shells; some of which have the *epidermis* worn off, and in that state are white.

Have received small specimens from *Folkstone* in *Kent*.

A variety is rarely found with two rufous-brown bands.



38.

Helix spinulosa. *Phil. Trans.* LXXVI. t. 2. f. 1. to 5. SPINULOSA.

(*Lightfoot.*)

Tab. 11. f. 10.

Helix aculeata. *Gmel. Syst.* p. 3638.

Muller Verm. ii. p. 81. No. 279.

Chem. Conch. ix. t. 133. f. 1209.

Morton Northamp. p. 415?

Helix nucleata. *Turt. Lin.* iv. p. 520.

II. with a sub-pellucid, thin, brown, horn-coloured shell, with five rounded volutions, well defined by the separating line, furnished with regular, membranaceous striae, that rise into fine hair-like spines, particularly round the middle of each volution: *apex* considerably produced; aperture semi-lunated: base perforated. Length one tenth of an inch; breadth nearly the same.

The striae of this species seem to be formed by the *epidermis*, which rises in some parts into thin, flat, bristly processes,

processes, that give it a spinous appearance: neither these, nor the striæ, are testaceous, but flexible, and easily rubbed off. It does not appear to be a plentiful species: we have found it in the woods at *Lackham* in *Wiltshire*, and about *Kingsbridge* in *Devonshire*; and have received it from *Sandwich* in *Kent*. This is probably the shell described by Mr. MORTON, to be found in *Morsley* wood, in *Northamptonshire*, but is extremely rare; he says, it had five wreaths, and that the live shell is a little bristly.

LIGHTFOOT, who has given a good figure of this shell, in the *Philosophical Transactions* for 1786, says, it was found near *Bullstode*, at the foot of pales, upon old bricks and stones, after rainy weather, in June and July.

It was called by Doctor SOLANDER *Helix delectabilis*.

Animal light coloured, paler beneath: *tentacula* four, the superior ones long in proportion to the animal, sub-clavate, furnished with eyes at their tips.

39.

CAPERATA.

Tab. 11. f. 11.

Helix nævia. *Gmel. Syst.* p. 3623. 245?

Turt. Lin. iv. p. 510?—*Gualt.* t. 2. N?

Chem. Conch. ix. t. 133. f. 1207?

Schroeter Flussconch. t. 5. f. 35.

H. with a sub-pellucid, and somewhat compressed shell, fasciated with purplish-brown and white: volutions six,

fix, furnished with strong, regular, close-set, longitudinal striæ: on the upper part of the body whirl is usually a brown belt, which continues up the lower part of the superior volutions: at the base of the shell are generally several small circular bands; these are frequently interrupted or broken, and appear spotted. Sometimes the brown *fasciæ* run into each other, and are elegantly spotted with white: aperture lunated; lip thin, not reflected: *umbilicus* moderately large and deep. Diameter at the base commonly three-eighths of an inch, rarely half an inch; height about a quarter.

This species is subject to great variety in markings; some are dark-brown with a single white belt on the body, and minutely spotted with white: others are cinereous-brown, or grey; but in most, some faint appearance of *fasciæ* are to be traced, and most commonly the white band round the middle of the body volution: the *apex* is of a dark colour. In shape it is a medium between the *Helix virgata* and *radiata*; is not so produced as the former, nor so flat as the latter; in the bands, or *fasciæ* at the base, it somewhat resembles the first, and in being strongly striated, is like the last.

The *umbilicus* is much less than in the *radiata*, although the shell is much superior in size.

It is a local species, and seems to affect dry situations.

We

We have found it sparingly in *Wiltshire*, and not uncommonly upon some of the hills in the south of *Devonshire*, especially about *Stanborough* and *Woolcomb*, amongst the short stunted herbage of the barren pasture land. It is also rarely met with in *Cornwall*; but the finest and largest are found in the barrack-yard of *George's-Square*, at *Plymouth Dock*, against the wall facing the south; so hot a situation in summer, that scarce any other species is ever found.

We have also received it from *Kent*, of a light cinereous colour, with so little appearance of bands or *fasciæ*, that it might readily have been mistaken for a distinct species, was it not for the strong, regular striæ, which, amongst the *British Helices*, seems to be confined to this and the *radiata*. Mr. BOYS favoured us with this shell, by the name of *Apex-niger*, by which it was known to Doctor SOLANDER, and placed as such in the *Portland cabinet*.



40.

RADIATA.

- Helix radiata.* *Da Costa.* p. 57. t. 4. f. 15. 16.
Pult. Cat. Dorset. p. 47.
Lister Conch. t. 1058. f. 11.
Gualt. t. 3. Q.—*Pctiv. Gaz.* t. 31. f. 5.
Morton Northamp. p. 416.
- Helix rotundata.* *Mull. Verm.* ii. p. 29. No. 231.
Schroeter Erdconch. p. 199. t. 2. f. 25.
Gmel. Syst. p. 3633.

H. with

H. with a compressed, sub-carinated shell, of a light-brown colour, prettily rayed with chefnut: volutions six, not much raised, but well defined by the separating line, and strongly marked with close-set, regular, longitudinal striæ, from the *apex* across the volutions: aperture lunated: *umbilicus* extremely large for the size of the shell, the turn of the spires visible to the end. Diameter a quarter of an inch.

This species is not uncommon in many parts of *England*, on old walls, and dry banks; and not unfrequent in woods, or under stones, or timber that has lain for some time.

We have found it in many parts of most the southern counties. It is subject to some variety; some are of a pale horn colour, with scarce any visible rays; dead shells become whitish and opaque, with faint brown rays; but in all states, it is easily distinguished by its compressed shape, deep and large *umbilicus*, and regular, deep-cut striæ.

Not *radiata* of GMELIN, nor *striatula*, which Doctor PULTENEY has quoted with doubt; but we suspect the *rotundata*.

Animal light-cinereous; *tentacula* four, superior ones filiform, sub-clavate, furnished with eyes at their tips.

UMBILICATA.

Tab. 13. f. 2.

H. with a sub-pellucid, dark, horn-coloured shell, inclining to chocolate: volutions five, much rounded, divided by a deep separating line, and finely striated across the whirls: *apex* moderately produced: aperture lunated; lip attenuated, not reflected; *umbilicus* extremely large and deep for the size of the shell, the spires visible to the end. Diameter at the base one tenth of an inch; height not quite so much.

This species has much the habit of the preceding, and might readily be confounded for the young of it, was it not always of a uniform dark colour: upon nice inspection too, it will be found to be not so flat, the volutions much more raised, and strongly divided, and the striæ less conspicuous.

We first discovered this shell on loose built walls, that enclose the fields about *Tenby* in *Caermarthenshire*, in vast profusion, lurking under the upper stones; and at first sight took them to be the young of the *H. radiata*, but by the assistance of a lens was soon convinced to the contrary; besides, not a single *radiata* was to be found in that neighbourhood. They seem to be confined to the north side of that town, and were not to be met with else-where: nor were we able to discover it in any other part of *England*, till about ten years after; when we found it in considerable abundance under loose stones, on the summit of the hill, in *Portland* island, and on the
top

top of *Corff Castle*, in *Dorsetshire*: and under the tiles of *Laycock Abby*, and *Lackham House*, in *Wiltshire*.

It is proper to remark, that the young *radiata* is quite flat when of the size of this shell, has only three or four volutions, but is strongly striated, and sub-carinated. In this the striæ are at all times scarcely discerned by the help of a glass, and the *apex* is considerably produced, even in their most minute state, when not so large as a small pin's head; and the lower volution rounded, without the least appearance of a carinated edge.

It is remarkable, that this shell always affects such lofty places as on the tops of houses, without one being found near the base; and in that situation its inhabitant braves equally the scorching beams of the sun in summer, and the frigid winds of winter, without attempting to descend.

Animal dusky-black, with four *tentacula* of the same colour; superior ones not very long, furnished with eyes at their tips: *sustentaculum* shorter than the shell.

-
- Helix lapicida*. *Lin. Syst.* p. 1241.—*Gmel. Syst.* p. 3613. 2. LAPICIDA.
Chem. Conch. ix. t. 126. f. 1107.
Muller Verm. ii. p. 40. No. 240.
Lister Conch. t. 69. f. 68—*Id. Angl.* t. 2. f. 14.
Br. Zool. t. 83. f. 121.—*Gualt.* t. 3. N?
Pult. Cat. Dorset. p. 46
Don. Br. Shells. ii. t. 39. f. 2.

Helix lapicida. *Turt. Lin.* iv. p. 502.

Schroeter Erdconch. p. 191. t. 2. f. 23.

P. in. Glac. t. 2. f. 11.

Helix acuta. *Da Costa.* p. 55. t. 4. f. 9.

H. with a sub-pellucid, compressed, brown shell, variegated with darker shades: volutions five, almost flat, or very little raised; and the shell is nearly equally convex above, and below; the lower volution strongly carinated, or brought to a sharp edge, which continues spirally throughout the superior volutions, and marks their separation by a fine thread-like ridge: it is striated, or rather wrinkled, across the whirls, and the whole shell is minutely and elegantly shagreened: base furnished with a wide, and deep *umbilicus*: aperture sub-oval, sub-lunated, margin sharp, white; outer lip reflexed; inner lip spreading on the body. Breadth three-quarters of an inch; height about three-eighths.

This species is found in many parts of the kingdom in shady woods, as well as in rocky exposed situations, such as the top of the hill in *Portland* island; where it is not uncommon. Sometimes in hedges, and ditch-banks, or on old walls, but is not a very plentiful shell any where; though it has been found in most of the southern counties.

We believe does not extend into *Cornwall*, or *Devonshire*; at least we never could find it in those parts.

Animal

Animal rufous-brown along the back, the sides dusky; a streak of the same at the base of each of the longest *tentacula*; these are furnished with eyes at their tips.

48.

- X *Helix Ericetorum*. *Gmel. Syst.* p. 3632.—*Gualt.* t. 3. P. ERICETORUM.
Chem. Conch. ix. t. 132. f. 1193. a. b.
Lister Conch. t. 78. f. 78.
Id Angl. t. 2. f. 13.
Pult. Cat. Dorset. p. 47.
Turt. Lin. iv. p. 516.
Muller Verm. ii. p. 33. No. 236.
Helix Erica. *Da Costa.* p. 53. t. 4. f. 8.
Helix albella. *Br. Zool.* t. 35. f. 122.
Turt. Lin. iv. p. 503.
Helix Itala. *Lin. Syst.* p. 1245.?
Gmel. Syst. p. 3636?

H. with a sub-pellucid, compressed shell; volutions six; the first remarkably rounded, the superior ones scarce elevated above the body whirl, wrinkled across the spires: colour white, sometimes with a yellowish tinge; on the upper part of the larger whirl is a brown band, which continues spirally at the bottom of each of the smaller volutions, and marks their division; at the base of the shell are frequently other small circular bands, from one to five in number: *umbilicus* remarkably large and deep, exposing nearly half the breadth of the smaller volutions: aperture sub-orbicular, sub-lunated; margin thin, a trifle reflected. Breadth three quarters of an inch;

inch; height little more than a quarter. Some variety is observed in this species, with respect to the ground colour, as well as that of the *fasciæ*; the former is from a pure white to a pale yellowish-brown, especially on the under part; and the bands vary from a pale to a deep purplish-brown: but it is not unusually found without any bands, and when dead and bleached is pure white.

This is not an uncommon shell upon dry, sandy heaths, and barren land, in many parts of *England*; but we never met with it so plentiful as upon the sandy declivity of the hill above *Whitsand* bay, at the extremity of the peninsula of *Cornwall*; where, together with *Helix virgata*, and *Turbo fasciatus*, the ground is perfectly covered.

It has somewhat the habit of the former of these last-mentioned shells; but is at once distinguished, by its compressed shape, and capacious *umbilicus*, in which it exceeds every other of the larger *British* species.

44.

SUBCARINATA.

Helix. *Walk. Min. Shells. f. 22?*

Tab. 7. f. 9.

H. with a sub-pellucid, white shell: volutions three; the lower one large, the others small, a little produced, and placed somewhat lateral: round the base of the body wreath are two fine ridges; and on the upper part another, which continues round the middle of the second
volution,

volution, and is lost in the future, or division, towards the *apex*; between the ridges, the shell is finely striated across the spires; from the lower ridge, at the base, commences a depression, or semi-circular channel, which sinks into a deep and large *umbilicus*: aperture oval; outer lip projecting considerably; inner lip reflected, and spreading into a sharp angle, elevated on the body whirl. The mouth, as well as the whole shell, is thick and strong for its size. Diameter at the base one tenth of an inch; height rather more than half as much.

This singular, and curious species, has much the habit of a *Nerita*, but the form of the aperture gives it a place amongst the *Helices*.

We have found it sparingly amongst fine sand from *Salcomb* bay, *Bigberry* bay, and *Milton* sands, on the south coast of *Devon*: and have received it from *Dover* in *Kent*, of a very inferior size, found on that coast by Mr. LYONS.



45.

II. with a depressed, sub-pellucid shell, of a light-DEPRESSA.
brown colour: volutions three or four; the superior Tab. 13. f. 5.
ones scarce elevated above the body, but well defined
by the separating line, and slightly wrinkled: *apex* very
conspicuous, but very little raised, or produced; lower
volution perfectly round or cylindric, so as to form a
large *umbilicus*, in which the others are distinctly seen:
aperture

aperture round, nearly even, lateral, and not clasping the body, but spreading a little on that part.

We found this species sparingly in sand from *Whitford* bay, and *Falmouth* in *Cornwall*; and at *Burrow* island in *Devonshire*. Diameter scarce one line.

This is by far the most compressed of any *British* marine shells, and bears some resemblance to *Helix cristata*, but is much smaller, stronger, more opaque, and the *apex* rather more prominent.



46.

PALUDOSA.

Helix paludosa. *Da Costa* p. 59.
Walk. Min. Shells. f. 23.
Morton Northamp. p. 417.

H. with a smooth, sub-pellucid, white shell, with four rounded volutions, well defined by the separating line; the superior ones very little produced from the body whirl, so that when viewed sideways the *apex* appears but little elevated: base largely umbilicated, shewing the turns of the smaller volutions: aperture round, margin thick, opaque white, reflected, not quite meeting on the body. Diameter one tenth of an inch.

DA COSTA has given this species from Mr. MORTON, who found it plentiful in boggy places in *Northamptonshire*.

It

It is not an uncommon shell in many parts of *England*, but from its smallness has escaped general notice. Mr. WALKER speaks of its inhabiting marshy ground, and not unfrequent about *Faversham*. We have received it from Mr. BOYS of *Sandwich*. It is most commonly found in rivers and streams of water, after floods, amongst the sand, and other refuse, brought down by the current; having been swept from the neighbouring wet and swampy situations. Is very plentifully found after a flood, on the banks of the river *Avon*, in *North Wiltshire*, about *Lackham*; and not uncommon amongst the drifted sand of the *Kennet*, at *Newbury* in *Berkshire*.

Sometimes met with in dry situations, on ditch-banks and old walls.



Turbo helycinus. *Phil. Trans.* LXXVI. t. 3. f. 1. to 4. CRENELLA.
(*Lightfoot.*) Tab. 13. f. 3.

47.

H. in every respect like the last, except that it is striated across the volutions in a strong and regular manner, and is frequently covered with a light-brown *epidermis*.

We received this shell from our estimable friend Mr. BOYS, by the name prefixed; he considered it as distinct from the *H. paludosa*, and said it inhabited mossy walls, and banks, where that shell was not to be found. We cannot, however, help expressing some doubts with respect to its being really distinct, with every submission

to such authority: but as we have frequently found it with the *paludosa*, and often times so little striated as scarce to be separated, think it but right to prepare others for so nice a discrimination.

Mr. LIGHTFOOT has given a very good figure of this shell in the *Philosophical Transactions* for 1786, considering it a nondescript species. Whether he was acquainted with the *H. paludosa* of DA COSTA, which is figured in WALKER'S *minuta rariora* is uncertain; but probably not, or he would have mentioned the great similitude between these. He particularly says, the volutions are transversely surrounded with numerous sharp-edged membranaceous rings, which are very fragile and deciduous.

If it is really distinct from the *H. paludosa*, we fear no permanent, specific character of distinction, will ever be fixed; for every gradation is to be seen, from the strongest striated, to those destitute of any such mark: both are equally pellucid white, when divested of their brown *epidermis*, in a living or recent state; and opaque in old dead shells.

In some the ridges or striæ are much elevated, and mostly membranaceous, but in such strong marked specimens the base of these striæ are permanent or testaceous, not to be destroyed by rubbing off the *epidermis*; whereas, in others that appear striated when fresh, are wholly

wholly divested of such appearance, by depriving them of the *epidermis*.

According to Mr. LIGHTFOOT, it has been found near *Bullstrode*, upon bare stones in moist weather.

This shell was named *Turbo Crenellus* by Doctor SOLANDER, as we have been informed by Mr. BOYS, who favoured us with a list of names given by that gentleman to many of the minute, and other shells, which he had sent to the *Duchess Dowager of Portland* at *Bullstrode*, for inspection, previous to the publication of the *Testacea minuta rariora*. From this circumstance it is evident, Mr. WALKER was acquainted with this shell, before it was given to the public by Mr. LIGHTFOOT, but for what reason it was omitted in the *Minute Shells* does not appear, unless it was then considered as an accidental variety of the *paludosa*.



48.

Helix utrinque umbilicata apertura rotunda unici anfractus. UNISPIRALIS.
Walk. Min. Shells. fig. 27.

The single spired, umbilicated, round mouth'd snail.

The colour white, opaque, and glossy.

From *Sandwich*; not common.

49.

REFUPINATA.

Helix apertura ampla ovali anfractibus apicis refupinatis.
Walk. Min. Shells. f. 24.

The snail with a large, oval mouth, and the spires of the tip turned backwards.

The colour of horn, semi-pellucid and glossy.

From *Sandwich*: very rare.

50.

GLOBOSA.

Helix globosa duobus anfractibus laevis apertura subrotunda.
Walk. Min. Shells. f. 25.

The smooth, round snail, with two spires and a roundish mouth.

The colour white, opaque, and glossy.

From *Sandwich*: not common.

51.

RETICULATA.

Helix reticulata. *Turt. Lin. iv. p. 525.*—*Ad. Micr. t. 14. f. 12.*
Helix unci anfractus sub-umbilicata apertura rotunda marginata eleganter reticulata. *Walk. Min. Shells. fig. 26.*

The round mouth'd, reticulated, single spired, slightly sub-umbilicated snail.

The colour white and pellucid.

From *Reculver*: extremely rare.

Helix

Helix striata. *Turt. Lin.* iv. p. 532.—*Adams Micr.* t. 14 f. 13. STRIATA.

Helix striata apertura sub-ovali anfractibus supradorsalibus.

Walk. Min. Shells. fig. 29.

The oval mouth'd, striated snail, with three spires reflected on the back.

The colour greenish-white, pellucid.

From *Sandwich*: very rare.



Helix anfractibus duobus apertura sub-rotunda ad umbilicum COARCTATA.

coarctata. *Walk. Min. Shells.* f. 30.

The snail with two spires, and a roundish aperture contracted near the *umbilicus*.

The colour white and pellucid.

From *Sandwich*: not common.

Mr. BOYS favoured us with this shell, with a reference to WALKER'S figure: from the appearance we have little doubt, but it is the fry of some species of land *Helix*.

The preceding six shells, which we have been obliged to copy from the *Testacea minuta rariora*, (never having come under our examination, the last excepted) are represented to be very minute.

54.

TUBULATA.

Helix tribus anfractibus longitudinaliter striatis. *Lin. Trans.* iii. p. 67. (*Adams.*)

Obs. Singularis hac in specie est constructio, nam testa, umbilici loco, tubo marginato qui extra testæ superficiem extenditur, instructa est. Fig. 35. 36.

Shell with three longitudinally striate whorls, and a margined tube at the base, in the place of an *umbilicus*, extending beyond the surface of the shell. *Turt. Lin.* iv. p. 525.

55.

VARIEGATA.

Helix testa lævi quatuor anfractibus, primo ventricosiore, lineis rubris notatis. *Lin. Trans.* iii. p. 67. (*Adams.*)

Obs. Basi imperforata. Testa sub-pellucida, aperturæ margine patentissima.

Shell imperforate, sub-pellucid, smooth, with red lines: whorls four, the first more ventricose: margin of the aperture very much spread. *Turt. Lin.* iv. p. 531.

56.

FASCIATA.

Helix testa lævi tribus anfractibus, primo ventricosiore, sub-umbilicatâ, aperturâ ampliâtâ. *Lin. Trans.* v. t. 1. f. 20. 21. (*Adams.*)

Obs. This delicate species is pellucid white; first spire marked with three transverse belts of a rich marone colour, the middle one broad, the lateral ones narrow.

Shell

Shell sub-umbilicated, smooth, with three whorls; the first more ventricose: aperture dilated. *Turt. Lin. iv. p. 525.*



57.

Helix testâ duobus anfractibus, subtilissimè transversè striatâ. NITIDISSIMA.
Lin. Trans. v. t. 1. f. 22. 23. 24. (Adams.)

Obs. Corneous, pellucid, umbilicated; easily distinguished by the uncommon brilliancy of its glossiness.

Shell umbilicate, with two whorls very finely striate transversely. *Turt. Lin. iv. p. 525.*



58.

Helix testâ lævi duobus anfractibus, vix umbilicatâ. Lin. BICOLOR.
Trans. v. t. 1. f. 25. 26. 27.

Obs. This species differs from the preceding, to which it is nearly allied in other respects, in being perfectly smooth, devoid entirely of any glossiness, and in having the inside of the shell white.

Shell slightly umbilicate, smooth, with two whorls. *Turt. Lin. iv. p. 525.*

The preceding five species we have been obliged to copy from the descriptions of minute shells given in the *Linnæan Transactions* by Mr. ADAMS; found on the coast of *Pembrokeshire*.

We

We shall however take this opportunity to remark, that great attention is requisite in the investigation of these microscopic species, which we fear have already been unnecessarily multiplied, arising from the difficulty of describing and delineating such small objects under a microscope. Those who have been in the habits of studying the diminutive works of nature in this way, are aware of the difficulty. Much caution is also requisite in admitting those minute species of shells, with only two or three volutions as distinct, unless they possess some character which strongly marks them as such, as many are probably the fry or young of others. Upon this principle we have rejected many which have come under our inspection, rather than puzzle science with uncertainty.

***DEPRESSED, APEX COMPRESSED.

59.
CORNEA.

- Helix cornea.* *Lin. Syst.* p. 1243.—*Gmel. Syst.* p. 3623. 35.
Lister Conch. t. 137. f. 41.—*Id. Angl.* t. 2. f. 26.
Chem. Conch. ix. t. 127. f. 1113. 1115.
Schroet Flussconch. t. 5. f. 19. 20. 21.—& t. *Min.*
C. f. 7.—*Gualt.* t. 4. D. D.
Muller Verm. ii. p. 154. No. 343.
Petiv. Gaz. t. 92. f. 5.—*Br. Zool.* t. 83. f. 126.
Favan. Zoomorph. t. 75. D. 1. 2. 3.
Pult. Cat. Dorset. p. 47.
Hill. Swanmerd. p. 83. t. 10. f. 3.

Helix

Helix cornea.	<i>Don. Br. Shells.</i> ii. t. 39. f. 1. <i>Turt. Lin.</i> iv. p. 510.
Helix nana.	<i>Br. Zool.</i> t. 83. f. 125. (young.)
Helix Cornu Arietis.	<i>Da Costa.</i> p. 60. t. 4. f. 13.
Helix similis.	<i>Gmel. Syst.</i> p. 3625 ?
Planorbis similis.	<i>Muller Verm.</i> ii. p. 166. No. 352 ? <i>Schroeter Flussconch.</i> p. 245. No. 58.

H. with a depressed, sub-pellucid shell, of a brown, or cinereous, sometimes rufous horn-colour, lightest on the under part: volutions four, rounded, and separated by a deep spiral line: *apex* much depressed, forming a considerable cavity: the under part nearly flat, or a little concave: it is considerably wrinkled across the volutions, and has sometimes one or two larger, antiquated ridges: aperture almost equi-lateral, sub-lunated; margin thin, a little oblique downwards; inner lip a little spread on the body whirl, whitish at the angles, and round the inner margin. Diameter usually about an inch, rarely an inch and a quarter.

This, the largest species of our depressed *Helices*, is not uncommon in some of our slow rivers, and stagnant waters, especially in old water courses and drains in low swampy situations; but is certainly more local than *DA COSTA* describes it to be; who says, it is common in all ponds, rivers, and lakes throughout *England*. This certainly is far from being the case; however, it is sufficiently plentiful in some parts, though we have never found

it further westward than in *Dorsetshire*; where, about *Wareham*, it is abundant.

This is one of the shells that yield a beautiful scarlet dye, but all attempts hitherto to fix it either by acids or astringents have proved ineffectual.

60.

COMPLANATA.

- Helix complanata.* *Lin. Syst.* p.1242.—*Gmel. Syst.* p.3617.
Turt. Lin. iv. p. 506.
- Helix Planorbis.* *Br. Zool.* t. 83. f. 123.
Petiv. Gaz. t. 10. f. 11.
Pult. Cat. Dorset. p. 46.
Chem. Conch. ix. t. 127. f.1121. 1122.
Lister Conch. t. 138. f. 42.
Id Angl. t. 2. f. 27.
Favan. t. 61. B. 5.—*Gualt.* t. 4. E.E.
Hill. Swanmerd. p. 84. t.10. f. 5.
- Planorbis umbilicatus.* *Muller Verm.* ii. p. 160. No. 346.
Schroeter Flussconch. p. 239. t. 5. f. 22.
to 25.—& t. *Min. C.* f. 4.
- Helix limbata.* *Da Costa.* p. 63. t. 8. f. 8.—t. 4. f. 10.

H. with a depressed, sub-pellucid shell, of a light horn-colour; sometimes rufous, or light chestnut-brown, and not unfrequently covered with a dark-brown *epidermis*: volutions five, laterally placed upon each other, gradually decreasing to the centre, making the shell concave at top; these are rounded and well defined by a strong separating line: the under part is also a little concave,

concave, and the whole shell finely striated or wrinkled across the whirls: round the margin of the base is a fine carinated ridge: aperture oval, somewhat angulated, not even, but flanting towards the base. Diameter about five-eighths of an inch.

This species, which has been generally mistaken for the *H. Planorbis* of LINNÆUS, is common in most flat countries abounding with wet ditches and water-courses: is frequent also in rivers, and ponds.

Animal dusky, with two long, slender, fetaceous *tentacula*, of the same colour, opaque, and very dark in the middle, but somewhat transparent along the sides: eyes placed on the head, at the base of the *tentacula* beneath.



61.

Helix Planorbis. *Lin. Syst.* p.1242.—*Gmel. Syst.* p.3617. CARINATA.
Turt. Lin. iv. p. 505.

Planorbis carinatus. *Muller Verm.* ii. p. 157. No. 344.
Chem. Conch. ix. t. 126. f. 1102. a. b.
Schroeter Flussconch. p.226. t. 5. f. 13.
14. 15.

H. with a depressed, flat, sub-pellucid shell, of a light horn-colour, somewhat glossy; volutions four, laterally placed upon each other; the outer one broad, not much rounded, but sloping gradually to a sharp carinated ridge, that furrounds the shell: the interior volutions are small, and suddenly decrease to the centre, where it sinks into a small *umbilicus*: the base is nearly flat, the inner volution not being sunk, but is on a level with the

M m m 2

others:

others: the whole shell is slightly wrinkled across the whorls: aperture narrow, oval, angulated. Diameter rather more than half an inch.

This and the preceding species have been generally confounded together in cabinets under the title of *Planorbis*: but they are perfectly distinct, though it is difficult to affix to them their proper synonyms. There is little doubt, however, that this is the *H. Planorbis* of GMELIN, and of MULLER, as in the characteristic description of the last author, he says "*carina marginali media*," and calls the shell *Planorbis carinatus*: and in his *Planorbis umbilicata* (which we consider as the *complanata* of LINNÆUS) he says, "*carina marginali inferiora*;" which well defines the *complanata*, or what has been termed by British conchologists *Helix Planorbis*, from a supposition it was that shell of LINNÆUS.

In order, therefore, to prevent confusion, we have not given the *Linnæan* title to this species, as the name of *Planorbis* is so well known to *English* collectors for a very different shell; but have adopted the name given by MULLER.

The great distinction of these two shells is, that this is not so thick as the *complanata*, the body whorl is not so rounded, but slopes gradually to the carinated ridge, which is not placed so low, and is equally conspicuous above and beneath; a circumstance not observable in the other. The base, or under side, in this is more flat, and
some-

sometimes even inclined to convexity: but a most essential character is, that the volutions taper more suddenly to the centre, terminating in a smaller, but deeper *umbilicus*. The aperture is also more compressed, and the continuation of the *carina* within the mouth more conspicuous. This shell is not near so common as the *complanata*, but is sometimes found in the same waters.

We first discovered it in the river *Avon* about *Lackham* in *Wiltshire*, but all dead and bleached white; which seems to be the character of this shell in that state. We do not, however, believe they inhabit that river, but are brought into it in the time of floods; though we could never find it elsewhere, amongst the other species, which is common in that neighbourhood. We afterwards found it near *Wareham* in *Dorsetshire*, where it is not uncommon in the meadows close to that town, in the isle of *Purbeck*, in ditches and water-courses; in company with the *complanata*. These were covered with a dusky-green *epidermis* when alive. It is, doubtless, found in other places, as we have seen it in several cabinets of *English* shells, mixed, and confounded with the *complanata*, under the title of *Helix Planorbis*.

Animal pale, of a yellowish tinge, with two long, slender, setaceous *tentacula*; with the eyes placed at their base, beneath. Differs from the animal of *H. complanata* in the *tentacula* being somewhat longer, and particularly in their being pellucid yellow, and not darker in the middle.

Helix

VORTEX.

- Helix Vortex. *Lin. Syst.* p. 1243.—*Gmel. Syst.* p. 3620.
Chem. Conch. ix. t. 127. f. 1127.
Schroeter Flussconch. p. 218. t. 5. f. 16. 17.
Lijster Conch. t. 138. f. 43.
Id. Angl. t. 2. f. 28.
Peiv. Gaz. t. 92. f. 6.
Gualt. t. 4. G. G.
Br. Zool. t. 83. f. 124.
Pult. Cat. Dorset. p. 47.
Turt. Lin iv. p. 508.
Don. Br. Shells. iii. t. 75.
 Helix Planorbis. *Da Costa.* p. 65. t. 4. f. 12.
 Planorbis Vortex. *Muller Verm.* ii. p. 158. No. 345.

H. with a sub-pellucid, very depressed, horn-coloured shell: volutions six or seven, placed lateral; the upper side concave; base or under side flat, and even, the whirls being only marked by a very fine line; the exterior volution is sub-carinated, or brought to an edge at the lower part: aperture compressed, sub-oval, angulated. Diameter three-eighths of an inch, rarely half an inch.

This is a very common species in rivers, ponds, and watery ditches, adhering to aquatic plants under water.

It is readily distinguished from any other *British* shell by the number of volutions, which exceeds any of the depressed *Helices*, and is much more flat in proportion, to its size, the *H. Spirorbis* excepted, with which it has been confounded. Its usual colour is light-horn, but is sometimes rufous-brown; and often covered with a dusky,

dusky, or greenish *epidermis* when alive: dead shells become white.

Animal dusky, with two long, slender, filiform, *tentacula*; and two black eyes placed at their base.



63.

SPIROREBIS.

Helix Spirorbis. *Gmel. Syst.* p. 3624. 36.

Planorbis Spirorbis. *Muller Verm.* ii. p. 161. No. 347.

Schroeter Flussconch. p. 236. No. 47.

Id. p. 229. t. 5. f. 18.

H. with a depressed, sub-pellucid, horn-coloured shell, with six volutions, placed exactly lateral upon each other, so that both the upper and under sides are equally flat; the volutions, however, are as much convex beneath as they are above, and the exterior whirl is nearly round, and destitute of any *carina*: aperture oval, in some nearly orbicular. Diameter of the largest three-tenths of an inch.

This species is not uncommon in the same place as the *H. Vortex*, with which it has generally been confounded in *English* cabinets.

MULLER has very well defined the distinction by saying, "*Planorbis testa flavescente, utrinque concava, æquali; anfractibus teretibus.*" This, when compared with his leading characters of the *Vortex*, will be found to be strong

strong specific distinctions. "*Planorbis testa flavofusca, sub-carinata, supra concava, subtus plana.*"

It is somewhat extraordinary that SCHROETER should have given a figure of this shell, and a very exact description, with the title of, "*Cornu ammonis 6 gyris rotundis circumscriptum,*" making a comparative distinction between it and the *Vortex*, and yet had not discovered it to be the *Spirorbis*, as is evident by his describing that shell in another place.

This species never grows so large as the *Vortex*, but both are alike finely striated, or wrinkled, across the volutions in an oblique direction; and the number of whirls are equal in shells of the same size.

The *Spirorbis* is never carinated like the *Vortex*, consequently the aperture is not angulated at the exterior margin, as in that shell: this too has the volutions raised, and rounded equally on both sides, and a deep separating line; the other has the volutions on the under side quite flat, and the line of separation not so deep; besides which, this is not quite so thin or depressed as the *Vortex*, when compared with that shell of the same size.

These distinguishing characters are invariable, and by which both species may be readily known from each other.

This has generally been described as the more rare, but we believe it is equally plentiful in *England*, at least
it

it has as frequently occurred to us; sometimes in the same pools with the *Vortex*, and at other times in separate places.



- Helix contorta.* *Lin. Syst.* p. 1244.
Gmel. Syst. p. 3624. 37.
Chem. Conch. ix. t. 127. f. 1126.
Petiv. Gaz. t. 92. f. 8.
Turt. Lin. iv. p. 511.
Schroeter Flussconch. p. 243. t. 5. f. 29.
Don Br. Shells. iii. t. 99.
Planorbis contortus. *Muller Verm.* ii. p. 162. No. 348.
Helix crassa. *Da Costa* p. 66. t. 4. f. 11.
Helix umbilicatus. *Pult. Cat. Dorset.* p. 47.

64.

CONTORTA.

H. with a depressed, sub-pellucid, brown, horn-coloured shell; sometimes rufous, or chestnut, and not unfrequently covered with a dusky *epidermis* when alive: dead shells become white. It has five or six volutions placed lateral; the outer one rounded, not carinated; these all rise on the upper part almost to an edge, being very close together, with only a very small, but deep depressed line between; in the centre a *sub-umbilicus*: the base, or under part, is largely and deeply umbilicated, shewing every volution, spirally descending to the bottom in a very elegant manner: aperture arcuated, by clasping the body whirl. Diameter two-tenths of an inch, and not quite one tenth thick.

N n n

DA COSTA

DA COSTA, as well as DOCTOR PULTENEY, has fallen into an error in quoting the *H. complanata* of LINNÆUS for this shell: and the last author is equally mistaken, in considering the chestnut-coloured variety of this species to be the *H. paludosa* of DA COSTA. It is at once distinguished from any of the *Illices* with a depressed apex, by its thickness in proportion to its size; and particularly by the singularly large, and spirally formed *umbilicus*.

There can be no doubt this is the *H. contorta* of LINNÆUS; CHEMNITZ has given a very good figure of it for that shell, which GMELIN quotes: MULLER and SCHROETER have also considered it as such.

It is rather a local species; but we have found it not uncommon in the river *Avon*, about *Lackham* in *Wiltshire* after floods; having been swept from the ditches in the neighbouring meadows, where it is found alive in abundance.

Is common also in the ditches in the isle of *Purbeck* near *Wareham*, and at *Charmouth* in *Dorsetshire*.

We have also received it from *Kent*.

Animal dusky, with two long and very slender, filiform *tentacula*, with the eyes placed at their base.

Helix umbilicata quatuor anfractibus apertura subrotunda. ALBA.

Walk. Min. Shells. f. 19.

Helix alba. *Gmel. Syst.* p.3625.—*Turt. Lin.* iv. p.511.

Petiv. Gaz. t. 92. f. 7.

Planorbis albus. *Muller Verm.* iii. p. 164. No. 350.

Schroeter Flussconch. p. 225. t. 5. f. 12.

II. with a sub-pellucid, light horn-coloured shell, covered when alive, with a brown *epidermis*, that renders it opaque: volutions four, placed lateral, compressed: the outer one rather inclining to an edge, but is not carinated: on the upper part, the *apex* is depressed into a *sub-umbilicus*: the base more strongly umbilicated: the whole shell, when examined by a common magnifying glass, is observed to possess very fine striæ, both transverse and longitudinal, in a slightly decussated manner: aperture sub-orbicular, sub-lunated, clasping the body whirl; margin thin, oblique.

This species, which is described and figured by WALKER, we originally received from Mr. BOYS of *Sandwich* for such: and have since found it of a much superior size, rather exceeding a quarter of an inch in diameter; which is more than double that which Mr. WALKER took his figure from.

It is one of the most common of the compressed species of *Helix*; is plentiful in the river *Avon* about *Lackham* in *Wiltshire*, as well as in the fish-ponds; and in many other places in the same county, especially at *Wedhampton*, in ditches and ponds, of a superior size.

We have also found it both in the north and south of *Devonshire*; in *Dorsetshire* about *Wareham*; and have received it from *South Wales*.

Young shells have only three volutions, but are readily distinguished in all states, by their extremely fine striæ, which give them a sort of roughness.

Animal of a light colour, with two long, slender, filiform *tentacula*; and two black eyes, placed at their base, on the top of the head.



66.

CRISTATA.

VIG. I.

Fig. 7. S.

Helix cornea quatuor anfractibus apertura rotunda. *Walk.*
Min. Shells. f. 18.

Valvata cristata. *Muller Verm.* ii. p. 198. No. 384.

Schroeter Flussconch. p. 240. t. 5. f. 26. a. b.

H. with a sub-pellucid, light horn-coloured shell, with three, and sometimes four, depressed volutions; the *apex* very little sunk; base, or under part umbilicated, exposing nearly the whole of the interior whirls: the volutions are remarkably rounded, or cylindric, and are striated, or slightly wrinkled transversely: aperture perfectly orbicular, attached to, but not interrupted by, the body whirl; margin not thinner than the rest of the shell, and very little oblique. Diameter one tenth of an inch.

This species we also received originally from Mr. BOYS, for the shell given by WALKER, as referred to,
but

but have since found it not uncommon in drifted sand, in the river *Avon* with the last, and sometimes on aquatic plants; but more plentiful in a ditch near *Wedhampton* in *Wiltshire*: it may, however, be considered as rather a scarce, or at least, a very local species.

When alive, it is covered with a very thin *epidermis*, which removed, the shell is a little glossy: dead ones become white and somewhat opaque. It is at once distinguished from all others by the cylindric volutions, and perfectly round mouth; and in a living state, by possessing a corneous *operculum*, striated spirally to the centre, but so close as to appear, at first sight, like concentric circles.

The animal too, is different from any we are acquainted with, except that of *Turbo fontinalis*, to which it bears great resemblance. It is dusky above, light beneath, with four *tentacula*, or feelers, two of which are placed as usual in other aquatic *limaces*; these are light-coloured, fetaccous; on the right side of the head behind, is a third slender feeler, not quite so long as the others, and close to it, more in the middle of the hind head, is a crest, or plumose appendage, very pellucid, and exquisitely sensible, retracting instantaneously at the least motion: eyes two, placed at the base of the two anterior *tentacula*: fore part of the body bilobated, making the head to appear as if issuing from a sheath, when viewed underneath.

MULLER

MULLER, as well as SCHROETER, has described the singular structure of this animal; the former has made a distinct genus of it, under the title of *Valvata*.

These shells are frequently taken up by the *larvæ* of *Phryganææ* to cover their cases: such is mentioned by MULLER; we have seen those cases wholly covered with this, as well as most other of the small *Helices*, laid in regular order with their apertures all placed one way: and not unfrequently three or four species on one case.

67.

FONTANA.

Tab. 6. f. 6

Helix fontana. *Phil. Trans.* LXXVI. t. 2. f. 1. to 4. (*Lightfoot*)

H. with a pellucid, horn-coloured shell, extremely flat, but nearly equally convex on both sides, yet depressed in the centre; the base furnished with a small, perfect umbilicus: volutions four; the outer one is brought to an edge, but not properly carinated, as it is formed only by the gradual slope of the shell on each side: it is smooth, glossy, and almost destitute of wrinkles: aperture contracted, and nearly brought to an angle externally; the internal angles clasp the body whirl nearly equal on both sides, taking in half the diameter of the first volution: margin very thin, and much oblique. Breadth not quite two tenths of an inch.

This species has been confounded with the *Nautilus lacustris*, to which it bears much resemblance externally,

ly, but is flatter, and not so convex on the upper part, and is at once distinguished from that shell in not possessing those lines which mark the concamerations.

It was first noticed by Mr. AGNEW, gardiner to the *Dutchess Dowager of Portland*; and was given in the *Philosophical Transactions* of 1786 by Mr. LIGHTFOOT, who states it to be met with in clear waters in the neighbourhood of *Bullstode* in *Buckinghamshire*.

We have found it sparingly in the ditches about *Wareham* in *Dorsetshire*: and near the village of *Wedhampton* in *Wiltshire*; but have observed it in greater abundance in a fish-pond at *Lackham* in the same county, and in the river contiguous, adhering to aquatic plants; frequently deep in the water.

It appears to be a local species, and not very plentiful any where; though we are informed it is not uncommon about *Sandwich* in *Kent*; from whence we were favoured with it by Mr. BOYS.

Animal light chestnut: *tentacula* two, long, slender, filiform, lighter coloured than the body; eyes placed on the upper part of the head at their base: head long; *sustentaculum* shorter than the *tentacula*.

From the extreme pellucidity of the shell, a strong and regular pulsation is observable (by the assistance of
a com-

a common pocket lens) in that part of the animal within the second volution; and which is of a reddish chefnut. When the animal is in motion (which is very slow) the exterior whirl appears almost empty.

68.

NAUTILEUS.

- ◆—
- | | |
|-----------------------|---|
| Turbo nautilus. | <i>Lin. Syst.</i> p. 1241.
<i>Gmel Syst.</i> p. 3612. 93.
<i>Turt. Lin.</i> iv. p. 501.
<i>Chem. Conch.</i> ix. t. 123. f. 1077. A. a. |
| Planorbis imbricatus. | <i>Mull. Verm.</i> ii. p. 165. No. 351.
<i>Schroet. Flussconch.</i> p. 238. No. 50. |
| Helix | <i>Walk. Min. Shells.</i> f. 20. & 21. |
| Helix carinata. | <i>Turt. Lin.</i> iv. p. 510.
<i>Adams. Microsc.</i> t. 14. f. 10 |
| Helix spinosa. | <i>Turt. Lin.</i> iv. p. 525.
<i>Adams Microsc.</i> t. 14. f. 11.— <i>Id.</i> t. 22. f. 39. |

H. with a pellucid, light horn-coloured shell, much depressed, with three or four volutions; upper side flat, but the whirls well defined by the separating line; *apex* not sunk below the rest of the shell: under side largely umbilicated.

It is furnished with distant, elevated annulations, or ribs, which seem to be partly testaceous, and partly membranaceous, for they are stronger, and more perfect, when the shell is covered with a dark brown *epidermis*; in which state a dorsal ridge or sub-carinated edge, of a mem-

a membranaceous nature, is observed, which frequently shoots into spines of the same texture.

This circumstance is not so common, and seems to depend either on age, or on the water it inhabits: in some places it is found only of a light, pellucid horn-colour; in others always dark-brown. It is subject also to some variation in the aperture; this, however, is generally round, not interrupted by the volution; sometimes, indeed, it projects, and does not adhere; others clasp the body whirl a little, and are somewhat compressed into a sub-oval. These last must be considered as mere varieties. It is distinguished at once by the distant annulations, though not always conspicuous without being considerably magnified. These varieties had induced Mr. WALKER to make them into two distinct species.

LINNÆUS, in the tenth edition of his *Systema Naturæ*, had made it a *Nautilus* under the title of *Crista*, and afterwards removed it into the *Turbo* genus. In this respect we have deviated from that great naturalist, by making all the depressed shells *Helices*, without regard to the mouth; a character in itself extremely vague, though perhaps it will be very difficult to find a better, for the division of the two *genera* so nearly connected.

We originally received several of these shells from our friend Mr. BOYS, for those of the *minuta rariora*, who

O o o

observed,

observed, they were not uncommon in the ditches about *Sandwich*. We have also found it, of a larger size than usual, in a pond at *Wedhampton* in *Wiltshire*, with the *Helix alba*. Diameter one eighth of an inch.

In a pond at *Knowle*, near *Kingsbridge* in *Devonshire*, it is in profusion; these are of a light colour, with a greenish tinge, and rarely spined; but the ribs are frequently very conspicuous, especially on the under part: and in a ditch of running water, which occasionally flows from the pond, they are equally abundant, of a dark colour, and strongly spined along the dorsal *carina*; an evident proof that this variety is occasioned by adventitious circumstances, such as the nature of their food, and quality of the water they inhabit. It is found on the under side of the leaves of many sub-aquatic plants, but seems partial to the creeping *Water-parsnep*, *Sium nodiflorum*, and *Water-creffes*, *Sisymbrium Nasturtium*.

Animal of a pale colour; *tentacula* two, setaceous; eyes on the head, situated at the base of the *tentacula*.

GEN. XXIX.

NERITA.

Animal a LIMAX.

SHELL univalve, spiral, gibbous, flattish beneath.

Aperture semi-orbicular; lip of the *Columella* transverse, flattish and truncated.

- 1.
- Nerita littoralis.* *Lin. Syst.* p. 1253.—*Gmel. Syst.* p. 3677. LITTORALIS.
Br. Zool. t. 87. f. 143.—*Turt. Lin.* iv. p. 550.
Lijster Conch. t. 607. f. 39. to 42. & f. 44.
Id. Angl. t. 3. f. 11 12. 13.
Da Costa. p. 50. t. 3. f. 7.—t. 4. f. 2. 3.
Don. Br. Shells. i. t. 20. f. 2.
- Turbo neritoides.* *Lin. Syst.* p. 1232.—*Gmel. Syst.* p. 3588. 2.
Chem. Conch. v. t. 185. f. 1854. No. 1. to 11.
Turt. Lin. iv. p. 479.
Pult. Cat. Dorset. p. 44.

N. with a thick, strong shell; colour various, commonly plain light, or orange-yellow, red, or brown; sometimes prettily mottled, or chequered brown, or yellow and white, and rarely fasciated; volutions four or five, the first very large, the others small and placed lateral,

teral, sometimes quite flat; others are somewhat produced, but the separating line is very small, and scarce discernable at the *apex*: aperture sub-orbicular, sub-lunated, sometimes inclining to oval; margin thickened within, the edge sharp. It is not so flat at the pillar lip as usual in shells of this genus, but spreads a little at that part. Length three-quarters of an inch; breadth not quite so much.

This species is extremely common on all our shores: is subject to great variety; both as to colour and shape, which seems to have occasioned some confusion, as there is little doubt but the *Nerita littoralis* and *Turbo neritoides* of LINNÆUS are only varieties of the same shell.

2.
PALLIDULA.

Nerita pallidulus. *Da Costa.* p. 51. t. 4. f. 4. 5.

Don. Br. Shells. i. t. 16. f. 1. 1.

Nerita pallidula. *Turt. Lin.* iv. p. 548.

N. with a sub-pellucid, light-brown shell, with three volutions, the first extremely large, the others very small, and placed lateral, scarcely produced, but well defined; is when alive covered with a rough brown *epidermis*, beneath which the shell is nearly smooth, or faintly wrinkled; aperture semi-lunated; outer lip thin, fringed by the *epidermis*; pillar lip thick, white, concave, and umbilicated; inside glossy. Length near half an inch; breadth three-eighths.

DA COSTA was the first writer who described this species,

species, and says, he received it from *Kent*, and *Dorsetshire*, but considered it as a rare shell. We have found it at *Falmouth* in *Cornwall*, and at *Teignmouth*, and *Milton* sands on the south coast of *Devonshire*.

It is certainly a rare species, at least those of any size; though not unfrequent at the last mentioned place, about the bigness of a hempseed. Dead shells become yellowish-white, and somewhat opaque; and in old specimens it is observable, the pillar lip is less concave, and the *umbilicus* smaller.

This shell was first sent to the *Dutchess of Portland* by Mr. Boys, and was numbered 125 in her grace's cabinet of minute shells. We have also been favoured with it from the same quarter, and are assured, it is found alive on the rocks of *Dover* and *Margate*.



Nerita glaucina. *Lin. Syst.* p. 1251 — *Gmel. Syst.* p. 3671. 3. GLAUCINA.

Chem. Conch. v. t. 186. f. 1856. 1859.

Lister Conch. t. 568. f. 19 — *Id. Angl.* t. 3. f. 10.

Br. Zool. t. 87. f. 141. — *Turt. Lin.* iv. p. 545.

Pult. Cat. Dorset. p. 50

Don. Br. Shells. i. t. 20. f. 1.

Cochlea Catena. *Da Costa.* p. 83. t. 5. f. 7.

N with a strong, smooth, glossy shell, faintly wrinkled, of a livid or purplish flesh-colour, sometimes ferruginous, or chestnut, about the *apex*: some are plain, but most times marked with spots or streaks in girdles; these

these are rarely seen in full grown shells on the body whirl, but in young specimens, which are usually white, these markings are extremely elegant, but vary in shape and colour: volutions six, the first very large and ventricose, the others small in proportion, rounded, produced, and placed somewhat lateral: *apex* very sharp pointed: aperture sub-oval, sub-lunated; outer lip rather thin, even; pillar lip thick, reflexed, forming a large and deep *umbilicus*; mouth closed by a corneous *operculum*. Length an inch and a half; breadth somewhat less.

This species seems principally to inhabit the deep, as it is thrown up in vast abundance on many parts of our open shores; is common on most of our sandy coasts, but no where more plentiful than on those of *South Wales*, and *Devonshire*.



4.

FLUVIATILIS.

- Nerita fluviatilis*. *Lin. Syst.* p. 1253.—*Gmel. Syst.* p. 3676.
Chem. Conch. ix. t. 124. f. 1088.
Br. Zool. t. 87. f. 142.—*Gualt.* t. 4. L. L.
Lister Conch. t. 607. f. 43. & t. 141. f. 38.
Id. Angl. t. 2. f. 20.—*Turt. Lin.* iv. p. 549.
Schroet. Flussconch. t. 5. f. 5. to 10.—& t. *Min.*
 C. f. 8.—*Mull Verm.* ii. p. 194. No. 381.
Da Costa. p. 48. t. 3. f. 8.
Farvan. t. 61. D. 3. 4. 17. 20.
Pult. Cat. Dorset. p. 50.
Hill. Swammerd. p. 83. t. 10. f. 2.
Don. Br. Shell. i. t. 16. f. 2.

Nerite.

Nerita lacustris. Gmel. *Syst.* p. 3677?—Gault. t. 4. M. M.
Turt. Lin. iv. p. 550.

N. with a sub-pellucid, sub-oval shell, elegantly spotted, streaked, or mottled with white and purplish-brown, pink, or pale-brown; with all the intermediate shades, for scarce two are found alike, either in colour or markings; some have one or two spiral bands: volutions three, the first extremely large, the others very small, but well defined, and placed lateral; *apex* minutely small, a little produced: is frequently covered with a brown or greenish *epidermis* when alive, which removed, the shell is glossy and smooth, except examined by a lens, when it is found to be finely wrinkled: aperture lunated; outer lip thin; pillar lip broad, flat, and white; mouth closed by a testaceous *operculum*, of an orange-yellow. Length three eighths of an inch; breadth two-eighths.

This species is found plentiful in many of our slow rivers, adhering to stones, but rarely in rapid waters; and of course, seldom or ever seen in the mountainous parts, where the rivers are torrents. In such are only to be found the *Mya margaritifera*, for rarely any other shell is to be met with where that inhabits, except *Patella fluviatilis*.

There seems very little doubt that the *Nerita lacustris* is a mere variety of this shell; the only figure referred to by GMELIN is that given by GUALTERI, neither which, nor its description, give any reason to suppose it distinct.

When

When alive it is frequently corneous, or blackish, spotted with white, as described by GMELIN: such are now before us, but can only be considered as one of the numerous varieties the *fluviatilis* is subject to.

5.
PELLUCIDA.

N. testa lævi pellucida, anfractibus tribus. *Lin. Trans.* iii.
p. 67 (*Adams.*)

Shell smooth pellucid, with three whorls, *Pembroke-shire* coast. *Turt. Lin.* iv. p. 550.

6.
ALBA.

N. testa lævi sub-pellucida, duobus anfractibus. *Lin. Trans.*
iii. p. 67. (*Adams.*)

Shell smooth sub-pellucid, with two whorls. *Pembroke-shire* coast. *Turt. Lin.* iv. p. 550.

These two minute species we have given on the authority of Mr. ADAMS: at the same time think it proper to remark, that there does not appear any distinguishing character; for if shells are to be separated by being a little more or less pellucid, or by one spire more or less, species would be multiplied without end. At the same time we are inclined to give Mr. ADAMS credit, yet in many instances we consider he has mistaken the fry of some, for distinct species; and suspect in these two instances the young of *Nerita glaucina* may be referred to: such are not uncommon amongst sand on many of our shores.

GEN.

GEN. XXX.

HALIOTIS.

Animal a LIMAX.

SHELL univalve, auriform, dilated.

Spire flat upon the shell, lateral.

Disk longitudinally perforated with several holes.

Haliotis tuberculata. *Lin. Syst.* p. 1256.

Gmel. Syst. p. 3687. 2.

Martini Conch. i. t. 16. f. 148. 149.

Lister Conch. t. 611. f. 2.

Id. Angl. t. 3. f. 16.

Br. Zool. t. 88. f. 144.

Pult. Cat. Dorset. p. 50.

Don Br. Shells. i. t. 5.

Turt. Lin. iv. p. 558.

Haliotis vulgaris. *Da Costa* p. 15. t. 2. f. 1. 2.

H. with a strong, thick, opaque, rough, shell, of a reddish-brown colour, and sometimes mottled, when cleared of

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Y.

TUBERCULATA.

extraneous matter with which it is covered, particularly *Balani*, and *Serpulæ*; especially *S. granulata*, and *Sinistrorsa*: the shape is oval, flat, striated longitudinally, and wrinkled transversely: near the inner margin is a ridge the whole length of the shell, which terminates in one spiral turn at the end, a little produced; this ridge is beset with tubercles, which increase in size as they recede from the *apex*, and become flat or concave; the last six, and sometimes as many as nine, are pervious: below the ridge is a depression or furrow; behind which the margin is rounded, and turns inward; the front margin is thin. The inside is entirely open, concave, and of a beautiful mother of pearl: the inflected edge forms a flat rim on the interior side, quite up to the spire, and is naced like the inside. Length from three to four inches; breadth from two and a quarter to three inches.

This species probably inhabits the deep, as we have not been able to learn that it has ever been taken alive on our coasts; though it is sometimes thrown upon our shores after violent storms, in *Suffex*, *Dorsetshire*, and *Devonshire*. In *Guernsey* it is found in great plenty, adhering to the rocks at the lowest ebb; the animal used for culinary purposes, and the shells adorn the houses of some of the common people, being fludded in the plaster on the outside.

GEN. XXXI.

PATELLA.

Animal a LIMAX.†

SHELL univalve, sub-conic, usually destitute of any spire.

- L.
- Patella vulgata. *Lin. Syst.* p. 1258.—*Gmel. Syst.* p. 3697. VULGATA.
Martini Conch. i. t. 5. f. 38.
Br. Zool. t. 89. f. 145.
Pult. Cat. Dorset. p. 51.
Lister Conch. t. 535. f. 14.
Id. Angl. t. 5. f. 40.
Don. Br. Shells. t. 14.
Turt. Lin. iv. p. 565.
Borlase Cornw. t. 28. f. 3.
- Patella depressa *Br. Zool.* t. 89. f. 146.—*Turt. Lin.* iv. p. 565.
- Patella vulgaris. *Da Costa.* p. 3. t. 1. f. 1. 2. 8.

P p p 2

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† The animals of this class do not appear materially different; those examined were like the *Limaces* inhabiting convoluted aquatic shells, possessed of only two *tentacula*, and the eyes situated at their base.

P. with a sub-conic shell. subject to much variety in its degree of elevation, in the prominence and number of ridges, and in the indentations at the margin; so much so as to have occasioned it to be multiplied into two or three different species. The full grown shells are usually of a conic shape, and somewhat oval; the vertex approximating rather to the smaller end, but frequently nearly central, marked with numerous fine striæ from the *apex* to the margin; which last is sometimes indented a little, sometimes quite plain: colour brown, or corneous. Inside smooth, glossy, and of a yellowish horn-colour, whitish at the bottom.

Others are more depressed; vertex placed more to one end, and the whole shell furnished with strong elevated ribs, with intermediate striæ; the margin strongly indented, and angulated by the ribs: outside, when cleaned, frequently streaked or rayed with brown: inside of old shells white, but in young ones of a deep chocolate-brown, with white streaks at the margin. These are the most essential varieties, and would certainly appear very distinct, were it not for the intermediate gradations, that seem to run into each other, and which has obliged later writers to consider them the same. It is proper, however, to remark, that these varieties (if they are really such) have nothing to do with size or age, for we have found the depressed ones nearly as large as those of a conic shape; and which are always more or less ribbed; whereas the latter are more properly striated;

ed; and are rarely indented, or angulated at the edges, or only faintly so. These too are always, when alive, of a horn-colour within, and not white or brown like the others: but whether they are really distinct is not easy to determine. Both inhabit all our rocky shores in vast abundance; the largest we ever saw were on the rocks at *Marazion* in *Cornwall* of the conic kind: some of which were near two inches and a half long, two broad; and an inch and a half in height.

We have also found the depressed ones two inches in length, by one and three-quarters broad; and not above three-quarters of an inch in height; with the ribs exceedingly strong, and angulated at the margin.



Patella pellucida. *Lin. Syst.* p. 1260.

Gmel. Syst. p. 3717. 133.

Chem. Conch. x. t. 168. f. 1620. 21.

Don. Br. Shells. i. t. 3. f. 1.

Lister Conch. t. 542. 543. f. 26. 27.

Id. Angl. App. p. 38. t. 2. f. 10.

Br. Zool. t. 90. f. 150.

Pult. Cat. Dorset. p. 51.

Borlase Cornwall t. 28. f. 1. 2.

Turt. Lin. iv. p. 582.—*Petiv.* t. 75. f. 3.

Patella coeruleata. *Da Costa.* p. 7. t. 1. f. 5. 6.

Patella lævis. *Br. Zool.* t. 90. bottom fig. without number

Patella intorta. *Id.* t. 90. f. 148.

Patella caerulea. *Gmel. Syst.* p. 3697. 24.

2.

PELLUCIDA.

P. with

P. with a pellucid, thin, yellowish, horn-coloured shell, of an oval shape, rounded at the top, with an obscure *apex* at one end; and beautifully rayed with dotted lines of azure: these lines vary in number, usually from three to seven, that are most conspicuous, running from behind the beak to the margin; but the sides in some are radiated in an obscure manner.

This is the description of the young shells, and such as have generally been considered as the *P. pellucida*.

Old shells are sub-pellucid, and most frequently dusky-brown; some are conic, others quite flat with the vertex nearly central, or a little to one end, radiated with blue in the same manner as the young, but the colour is less brilliant, and frequently very obscure: these blue rays, in some, rise into fine elevated striæ all round the shell, terminating at the *apex*; besides which it has some circular wrinkles: aperture oval, margin plain, rather inclining upwards at each end. Inside glossy, of a changeable opalacious colour, frequently of a blueish cast. Length near an inch; breadth not quite three-quarters.

Nothing can be more different in appearance, as to shape, than this species is in its infant and adult states; and were it not for the regular gradations, would probably have continued to be formed into two or three species; as Mr. PENNANT has done with respect to his *P. lævis* and *intorta*. He is however not singular in this,
for

for other authors have considered some varieties of this shell as distinct species: the *P. caerulea* of GMELIN is certainly nothing else than a full grown shell.

It is remarkable, however, that the very thin transparent shells have the bottom, or margin, always even, and not turned upwards at the end; and yet some, not half the size, are more opaque, and have all the shape of full grown ones.

It has also been remarked, that the pellucid variety is always found on the leaves, and the others on the stalks of *algæ*; however this may be, there appears no possibility of fixing a permanent distinction.*

It is a common species on many parts of the *Cornish* and *Devonshire* coasts: is never found adhering to rocks, but we have frequently taken it alive after storms, adhering to the *Fucus digitatus*, that has been thrown up by the violent agitation of the sea. It is not uncommon on the coast of *Dorsetshire*; and we have received it from *Sandwich* in *Kent*, where it is always found on the same plant; the stalk of which the animal excavates, probably as food, and forms a cell; sometimes two or three are found in the same: and Mr. BOYS assures us, it

* Variety of situation will occasion variety in shape; while young it feeds only on the leaves, and their shape at the margin corresponds with the flat surface they adhere to: so when they attack the stalk, they acquire that shape which a convex surface requires for close contact; and which occasions the difference of growth in the old and young shells.

it is occasionally seen on the broad bottom part of the leaf, while the plant is growing on the rocks. We have found the young in clusters on the leaves, but rarely on the stalks, though sometimes on the roots.



3.
PARVA.

Patella parva. *Da Costa* p. 7. t. 8. f. 11.

Don Br. Shells i. t. 21. f. 2.

Turt. Lin. iv. p. 592.

P. with a thin, sub-pellucid, sub-conic, oval shell, of a blueish-grey, and sometimes horn-colour, tinged with purple; but usually covered with a dark *epidermis*, or extraneous matter, that obscures the shell; it is obsoletely striated longitudinally, wrinkled circularly, and elegantly marked with purplish-red lines, radiating from the *apex* to the margin; in some these lines are broad, in others narrow and undulated, running into each other like the links of a chain; sometimes only visible at the margin, and always most conspicuous in the inside: vertex placed nearest to one end, pointed, reflected, but not curved. Inside smooth, glossy, of a purplish hue. Dead shells become white, and lose all their markings, except two lines immediately above the beak, which join and form the shape of a V. Length three-eighths of an inch; breadth two-eighths; height not quite so much: rarely half an inch long.

DA COSTA seems to be the first author that described this shell; and since by Mr. DONOVAN: the former, however,

however, appears to have only met with dead specimens, by his saying it is whitish in its ground colour, as well as having no gloss within; neither did he seem acquainted with its natural history. The latter author is also silent on this head, and has followed DA COSTA, in stating it to be a production of the *Dorsetshire* coast, the only place he ever received it from. We first found it in sand from *Falmouth* harbour, and *Whitſand* bay, in *Cornwall*, not common, and all dead specimens; and afterwards in great abundance alive, in *Salcomb* bay in *Devonshire*: they always lie near the lowest water-mark, adhering to loose stones, old *oysters*, and other shells, and are mostly obtained by dredging.

It is also found sparingly on other parts of the same coast, thrown upon the shores. We have received dead, and much worn shells, from *Sandwich* in *Kent*.

It seems to be a local species, and has not often been obtained by collectors in a recent state.

Doctor PULTENEY does not give it in his Catalogue of *Dorset* Shells, notwithstanding DA COSTA received it from that coast, and has been found by Mr. BRYER at *Weymouth*.

Mr. BOYS informs us, that although only dead shells are to be met with at *Sandwich*, it is found alive on the rocks at *Dover*.

4.

BIMACULATA.

Tab. 13. f. 8.

P. with an opaque, oval shell, of a glossy yellow colour, and perfectly smooth, with only the rudiment of a vertex at the smaller end, marked by a transverse, oblong, black spot; another oblong spot of the same colour near the other end, placed longitudinally: the shell is convex, but not much elevated. Inside concave, smooth, glossy, yellow; margin thin. Length a quarter of an inch; breadth rather more than one eighth; height about one sixteenth of an inch.

We found one of this rare and singular species at *Falmouth* in *Cornwall*; and another, in every respect the same, at *Milton sands*, on the south coast of *Devon*; they were both recent and perfect shells, but not alive.

5.

FLUVIATILIS.

Patella fluviatilis. *Gmel. Syst.* p. 3711. 98.

Gualt. t. 4. f. A. A.

Lister Conch. t. 141. f. 39.

Id. Angl. t. 2. f. 32.

Da Costa. p. 1. t. 2. f. 8. 8.

Favan. t. 61. A. 3. 4.

Schroeter Flussconch. t. 5. f. 1. 2. 3.

Ancylus fluviatilis. *Muller Verm.* ii. p. 201. No. 386.

Patella lacustris. *Br. Zool.* No. 149.

Fult. Cat. Dorset. p. 51.

Turt. Lin. iv. p. 577.

P. with a sub-conic, pellucid, horn-coloured shell, usually covered with a dark-brown, green, or dusky
epidermis,

epidermis, and marked with a few circular wrinkles: vertex sharp, placed near to one end, reflexed, or somewhat hooked: aperture or opening oval, margin thin, inside glossy. Length three-eighths of an inch; breadth two-eighths; height not quite so much.

A variety is sometimes met with, finely striated longitudinally from the beak; and we received some specimens from a fresh-water stream, near *Folkstone* in *Kent*, more strongly striated than usual; which were considered as a distinct species.

These were of an inferior size, and covered with a dusky *epidermis*: they appear to us to be only a variety, differing in nothing but the striæ being more conspicuous.

This species has generally been considered as the *P. lacustris* of LINNÆUS, the synonyms, however, of GMELIN, are certainly those of the *P. fluviatilis*. It is a very common shell in most of our rivers, and in many small streams and stagnant waters, adhering to stones, and rarely to the leaves or stalks of aquatic plants. Is almost the only shell, we believe, found to inhabit the rapid torrents, with the *Mya margaritifera*. In *Devonshire*, especially in the south, every little stream produces abundance; even the cold rills that originate from springs, and flow down the wooded declivities, except where granite prevails: on the contrary, about the eastern parts

of *Kent*, it has been considered a rare species, and the *P. lacustris* altogether as plentiful; a shell we believe not known so far west as the former county. Such is the locality of nature's stores.

6.

LACUSTRIS.

- Patella lacustris.* *Lin. Syst.* p. 1260?
Gmel. Syst. p. 5710. 97.
Favan. t. 61. A. 1?—*Turt. Lin.* p. 577.
Schroeter Flussconch. t. 5. f. 4. a. b.
- Patella oblonga.* *Pult. Cat. Dorset.* p. 51.
Phil. Trans. LXXVI. p. 168. t. 3. f. 1.
 2. 3. 5. (*Lightfoot.*)
- Ancylus lacustris.* *Muller Verm.* ii. p. 199. No. 385.

P. with a thin, pellucid, compressed, and almost membranaceous shell, of a pale horn-colour, most commonly covered with a greenish *epidermis*: shape oblong: vertex very small, pointed, a little reflected, standing rather oblique, or turning to one side; not quite central, but rather nearest to one end: outside nearly smooth, or very faintly wrinkled, but not glossy: aperture oblong-oval, nearly equal at each end: margin membranaceous. Inside smooth and glossy. Length a quarter of an inch, or rather more; breadth one eighth; height about half its breadth.

DOCTOR PULTENEY says, this shell is found on plants in the river *Stour* in *Dorsetshire*, and has quoted the *P. fluviatilis* of GMELIN and MULLER, in which we think

think the Doctor has erred: the latter author has well defined this shell No. 385, where he says "*Ancylus testa membranacea mucrone verticis subcentrali, apertura oblonga*. It differs from the *fluviatilis* in being much longer in proportion to its breadth, in being much more compressed, and in the vertex being much smaller, placed more central, and always turning a little to one side. It is not near so plentiful a species as the other, never attaches itself to stones, but is always found on plants under water, especially the *Scirpus lacustris* and other rushes, as well as the common reed, *Typha latifolia*, stalks of the common flag, and *Irus pseudacorus*. Is not uncommon upon these plants in the ditches of *Deal* marshes, in *Kent*, particularly on the last, as we are informed by Mr. BOYS; and LIGHTFOOT speaks of its being found on the same plant, in waters near *Beaconsfield*, in *Buckinghamshire*. MULLER says "*Foliis Nymphæ, Potamogetonis, & Stratiotis adhæret.*"

We have them tolerably plentiful in a fish-pond at *Lackham* in *Wiltshire*; and in the river *Avon*, on the stalks of the *Yellow water-lily*; but is rarely, if ever, found in rapid waters, in which the *fluviatilis* seems most to delight.



7.

Patella antiquata. *Lin. Syst.* p. 1259.—*Gmel. Syst.* p. 3709? ANTIQUATA.
Martini Conch. i. t. 12. f. 111. 112. Tab. 13. f. 9.
Lister Conch. t. 544. f. 31.

Patella

Patella antiquata. *Pult. Cat. Dorset.* p. 51.

Patella Mitrula. *Gmel. Syst.* p. 3708.

Turt. Lin. iv. p. 575.

P. with a strong, thick, opaque, white shell, somewhat of a conic shape, furnished with concentric, imbricated wrinkles: vertex varying; sometimes obliquely pointing upwards, often extended and recurved; and frequently obtuse, and placed near to one end: aperture oval, sometimes nearly round. Diameter about half an inch.

DOCTOR PULTENEY informed us, this shell had been found at *Weymouth* after a severe storm, by Mr. BRYER of that place; and in a list of the shells found by this gentleman on that coast, which he obligingly favoured us with, this is mentioned.

8.

UNGARICA.

Patella Ungarica. *Lin. Syst.* p. 1259.

Gmel. Syst. p. 3709. 89.

Martini Conch. i. t. 12. f. 107. 108.

Pult. Cat. Dorset. p. 51

Don. Br. Shells. i. t. 21. f. 1.

Borlase Cornw. t. 28. f. 4.

Gualt. t. 9. W.

Patella Hungarica. *Br. Zool.* t. 90. f. 147.

Turt. Lin. p. 576.

Patella Pileus Morionis major. *Da Costa.* t. 1. f. 7. 7.

P. with a sub-conic, sub-pellucid, thin shell; vertex much reflected, terminating in a spiral turn underneath, of two
or

or three small wreaths, rarely inclined to either side, except at the *apex*, where the whirls are only visible on that side which makes it a dextral shell; but frequently projects as far as the margin, sometimes quite low, and almost touching that part; others are more considerably elevated.

In a live, or recent, state, it is covered with a rough, pilous *epidermis*, of a brown colour; beneath which the shell is of a deep flesh-colour, inclining to carnation: finely striated longitudinally, and frequently wrinkled transversely. Inside extremely smooth, and glossy, generally of the same colour, but brighter, sometimes white; margin of the aperture nearly round, more or less undulated or indented, and crenated: the *epidermis*, which projects beyond the margin, forms a ciliated border. Diameter rarely more than an inch; and half an inch, or five-eighths in height.

This is a rare species, and, as far as we have been able to ascertain, is only found on the coasts of the western counties. It has been dredged up at *Weymouth* in *Dorsetshire*; and is sometimes found on the south coast of *Cornwall* and *Devonshire*, especially about *Looe*, and at *Plymouth*; at the latter place, we have taken it by dredging, attached to *Pecten opercularis*, which is commonly called *Frill*. Have also found it on the shore at *Milton* sands, and have obtained it alive from the bay of *Salcomb* in the same county, on the *Pinna ingens*.

One

One specimen, from the last place, is of an extraordinary size, measuring two inches in diameter, and one inch and a quarter in height: it is thick, strong, opaque, and much wrinkled transversely.

Dead shells usually become white, or very little tinged with flesh-colour, are destitute of *epidermis*, and lose the crenated margin.

9.

MILITARIS.

Tab. 13. f. 11.

Patella militaris. *Lin. Mant.* p. 553.

Lyster Conch. t. 544. f. 32.

Favan. i. p. 538. t. 4. B. B.

Pult. Cat. Dorset. p. 51.

P. with a sub-pellucid, sub-conic, white shell, finely striated both ways, so as to give it a pretty cancellated appearance: vertex much reflected, recurved, and turned to one side, descending almost to the edge of the shell, but projecting beyond it: aperture round, and even. Inside glossy white. Diameter at the base about half an inch.

This species has somewhat the habit of the last, but is not so broad at the base in proportion; and is at once distinguished by the beak turning to one side, by being reticulated, and a much stronger shell. In a recent state it is covered with a brown, pilous *epidermis*.

This is certainly a very rare shell on the *English* coast,
but

but has been found at *Weymouth* by Mr. BRYER; a specimen of which we received from Doctor PULTENEY.

Patella Chinenfis. *Lin. Syst.* p. 1257.

Martini i. t. 13. f. 121. 122.

Lister Conch. t. 546. f. 39.

Patella Sinenfis. *Gmel. Syst.* p. 3692.

Turt. Lin. p. 562.

Patella albida. *Don. Br. Shells.* iv. t. 129.

10.

CHINENSIS.

Tab. 13. f. 4. 4.

P. with a very thin, sub-pellucid, sub-conic shell, of a pale-brown, or whitish colour, sometimes tinged with bluish, much compressed, and rounded at the margin: vertex central, terminating in a very small, sub-spiral volution: slightly wrinkled concentrically, and rough with short, concave scales, not unusually all over the shell, but commonly most on one side, and rarely towards the top. Inside extremely glossy, smooth, and white, furnished with a sub-spiral *Columella*, or pillar lip, which extends from very near the margin to the end, and forms the external sub-volution; it is broad, flat, thin, and stands oblique to the side of the shell.

There seems very little doubt but this is the *P. Chinenfis* of LINNÆUS. MARTINI gives a figure of it, and quotes that shell; and GMELIN quotes MARTINI for his *P. Sinenfis*.

This species we believe had never been noticed as *British*, when we were first favoured with it by Colonel GEORGE, of *Penryn* in *Cornwall*, in 1795, who took it from an *oyster* shell; and we afterwards found a few others on *oysters* from *Helford* harbour, the same place from which the original came. As far as we have been able to ascertain, it is always attached to those shells, as we have since taken it sparingly in *Salcomb* bay in *Devonshire*: these were alive, adhering very closely to the upper valve. Some are rather more conic than others, but are rarely above a quarter of an inch in height: diameter five eighths of an inch, usually less, having taken it of all intermediate sizes, between that and one tenth of an inch.

DONOVAN gives his as a production of *Cornwall*.

It has been received from *India*, and is a shell of the *Mediterranean Sea*.

11.

FISSURA.

- Patella Fissura. *Lin Syst.* p. 1261—*Gmel. Syst.* p. 3728.
Martini Conch. i. t. 12. f. 109. 110.
Lister Conch. t. 543. f. 28.—*Petiv.* t. 75. 2.
Br. Zool. t. 90. f. 152. (number misplaced)
Da Costa. p. 11. t. 1. f. 4.
Pult. Cat. Dorset. p. 51.
Don. Br. Shell. i. t. 3. f. 2.
Turt. Lin. iv. p. 592.

P. with

P. with a sub-pellucid, conic shell, of a brown colour when alive, strongly, and elegantly cancellated: vertex a little reflected: distinguished by a longitudinal fissure, or slit at the anterior end, from the margin upwards, about one fourth the length of the shell: Inside smooth, glossy, flesh-coloured; margin oval, crenated. Length half an inch; breadth three eighths; height the same.

In young shells the vertex is much more reflexed, and sometimes slightly hooked, turning backwards almost perpendicular to the posterior margin. Worn shells become white, or pale flesh-colour, and lose their crenated edge.

This appears to be a local species, and seems to be chiefly confined to the western coasts. Doctor PULTENEY mentions it on the shores of *Dorsetshire*; and DA COSTA on those of *Cornwall* and *Devonshire*, particularly at *Barnstable*; but had probably never seen a live, or recent specimen, as he describes it to be white.

We have found it sparingly on some parts of the *Cornish* coast; and more plentiful on that of *South Devon*, obtaining the most perfect specimens by dredging in *Salcomb* bay, adhering to stones, and old *oyster* and other shells; but not common, or of a large size. Have also received small ones from *Sandwich* in *Kent*.

Patella Fissurella. *Gmel. Syst.* p. 3728. 193?
Turt. Lin iv. p. 592?
 R r r 2

12.
 APERTURA.
 Tab. 13. f. 16.

P. with

P. with a sub-conic, sub-pellucid white shell, marked with strong, longitudinal, tuberculated ribs, and a few circular ridges, that give it a cancellated appearance: vertex reflected, the point very small, and turning downwards: not detached, but adhering to the top of the shell, sometimes making one convolution; immediately above which is a rhomboid perforation. Inside smooth, glossy, white; margin oval, edge crenated by the ribs.

This rare species we first found in sand, from *Falmouth* harbour in *Cornwall*, and afterwards dredged it up alive in *Salcomb* bay, in *Devonshire*, adhering to stones. Length not quite a quarter of an inch, and scarce one eighth of an inch in height.

In one instance this shell had a few brown streaks running half way up from the margin.

At the time the figure was engraved, we were not in possession of so large a specimen as above described.



13.
GRÆCA.

- Patella Græca.* *Lin. Syst.* p. 1262.—*Gmel. Syst.* p. 3723.
Martini Conch. i. t. 11. f. 98.
Lister Conch. t. 527. f. 2.
Br. Zool t. 89. f. 153.
Pult. Cat. Dorset. p. 52.
Turt. Lin. iv. p. 593.
Patella reticulata. *Don. Br. Shells.* i. t. 21. f. 3.
Patella Larvæ reticulata. *Da Costa* t. 1. f. 3.

P. with

P. with an oblong, oval, thick shell, of a dull brown colour, strongly reticulated; some of the longitudinal ridges are much coarser than the rest, and are frequently tuberculated by the crossing of the transverse striæ: vertex not much elevated, truncated, and furnished with an oblong perforation. Inside smooth, white, sometimes rayed with dull purple or brown; margin not even, but somewhat indented or arcuated at the sides, and finely crenated. Length about three-quarters of an inch; breadth scarce half an inch; height a quarter.

This shell is rarely found of a superior size on the *English* coast, but foreign specimens are sometimes an inch and a half in length. It has generally been considered as a rare species in this country: DA COSTA speaks of it from *Weymouth*, and observes, that he never could learn that they inhabit any other *British* coast.

DoctOR PULTENEY also mentions it from the same place, and from *Poole*. We have found it on *Studland* beach in *Dorsetshire*, larger than usual. Is rare in *Cornwall*; but on some parts of the south coast of *Devon* not uncommon, especially on *Milton* sands: and frequently dredged up alive in *Salcomb* bay, but seldom exceeding half an inch in length. It is not unusual on *Sandwich* flats in *Kent*, as we have been assured by Mr. BOYS. Dead shells are most commonly of a pale-brown, or yellowish-white, and sometimes streaked, or spotted with dark-brown.

GEN.

GEN. XXXII.

DENTALIUM.

Animal a TERESELLA.

SHELL univalve, tubular, nearly strait; not divided into chambers; and (for the most part) pervious, or open at both ends.

1.
DENTALIS.

- Dentalium Entalis. *Lin. Syst.* p. 1263.—*Gmel. Syst.* p. 3736.
Martini i. t. 1. f. 1. 2.
Lister Conch. t. 547. f. 2. & t. 1056. f. 4.
Br. Zool. t. 90. f. 154.—Petiv. t. 65. 9.
Pult. Cat. Dorset. p. 52.
Borlase Cornw. t. 28. f. 5.
Turt. Lin. iv. p. 601.
 Dentalium vulgare. *Da Costa. p. 24. t. 2. f. 10.*

D. with a slender, smooth, glossy, sub-arcuated shell, tapering to a small point, pervious: sometimes marked with a few circular wrinkles or annulations: colour white or yellowish. Length an inch and a half; diameter at the larger end two-tenths of an inch; and one fourth as much at the smaller end.

This

This species is found on many of our shores, particularly those of the west of *England*; is not uncommon on the coast of *Sandwich* in *Kent*, and on the sandy flats of *Caermarthenshire*. It is, however, rarely taken alive, even by dredging, from which we may conclude it is a pelagic shell.

A variety is marked with dusky bands: and sometimes a little striated towards the point.



Dentalium Dentalis. *Gmel. Syst.* p. 3786. 3?

Turt. Lin. iv. p. 600.

Born Mus. t. 18. f. 13.

2.
STRIATUM.

D. with a slender, sub-arcuated, taper shell, very small at the point, and pervious, regularly and closely striated the whole length of the shell; the striæ in fresh specimens are very conspicuous, and are about twenty in number: sometimes a few faint annulations are observable at the larger end: colour white, but not glossy. Length half an inch; diameter of the largest part, one line.

We have found this rare species at *Falmouth* in *Cornwall*, and on the south coast of *Devonshire*.

It is readily distinguished from the young of the preceding species, by its being elegantly striated.

D. with

3.
 GADUS. D. with a sub-pellucid, sub-arcuated shell, tapering
 Tab. 14. f. 7. to a small point, pervious, contracting a little towards
 the larger end; is white, glossy, and perfectly smooth,
 without the smallest appearance of wrinkles or striae.
 Length scarce three-eighths of an inch; diameter of the
 largest part, about one sixteenth.

This is a pelagic species, found in many parts of
 the *British* channel; and is known to mariners by the
 name of *Hake's-tooth*, who frequently find it within
 foundings, adhering to the log line (as we are informed)
 but most likely to the plumb line.

4.

IMPERFORATUM. Dentale apice imperforata transversaliter sub-striata. *Walk.*
Min. Shells. f. 15.
 Dentalium imperforatum. *Adams Microsc.* t. 14. f. 8.
Turt. Lin. iv. p. 602.

D. with a cylindric, sub-arcuated shell, striated trans-
 versely: aperture round, a little contracted at the mar-
 gin: the opposite end closed, truncated, and furnished
 with a small round protuberance: colour white or cine-
 reous. Length one eighth of an inch; breadth one
 third of its length.

We first received this shell from Mr. BOYS, for that
 of WALKER referred to; and have since found it in sand
 from *Falmouth* harbour, but rare. Mr. WALKER says
 from *Sandwich*, not very common.

D. with

D. with a sub-cylindric, arcuated shell, marked with TRACHEA. regular, strong, transverse striæ, or annulations: aper- Tab. 14. f. 10.
 ture round, from whence it tapers a little to the other
 extremity, which is closed, truncated, and furnished
 with a small, round protuberance: colour ferruginous-
 brown, lightest towards the smaller end. Length rather
 more than one eighth of an inch; diameter one fifth of
 its length.

This species is at once distinguished from the last, by
 being more arcuated, and a little tapering; is longer in
 proportion to its breadth, the margin of the aperture
 even, and not contracted, and the annulations stronger,
 giving it the appearance of the windpipe or *trachea* of
 an animal.

We found it in sand from *Milton* in *Devonshire*, but
 is extremely rare.



D. with a cylindric, arcuated, smooth, glossy, white GLABRUM,
 shell, devoid of either striæ or wrinkles, and equal in
 size throughout: aperture orbicular; the other end
 closed, rounded, and sub-margined. Length scarce
 one line; diameter one fifth of its length.

This nondescript species is found amongst the sand at
Biddeford bay, but more plentiful near *Barnstable*, on
 the north coast of *Devonshire*, amongst the *rejetamenta*
 of the river, occasioned by the influx of the tide.

GEN. XXXIII.

SERPULA.

Animal for the most part a TERESELLA.

SHELL univalve, tubular, adhering, or affixed to other bodies; (in some species divided into cells.)

* SPIRAL.

1.

SPIRORBIS.

- Serpula Spirorbis.* *Lin. Syst.* p. 1265.—*Gmel. Syst.* p. 3740.
Martini Conch. i. t. 3. f. 21. A. B. C.
Lister Conch. t. 553.—*Gualt.* t. 10. f. O.
Chem. Conch. ix. t. 116. f. 999?
Br. Zool. t. 91. f. 155.
Da Costa. p. 22. t. 2. f. 11.
Don. Br. Shells. i. t. 9.
Turt. Lin. iv. p. 603.

S. with an opaque, white shell, with three or four regular, lateral whirls, rounded on the upper part, and a little wrinkled: umbilicated in the centre: base flat, spreading. Diameter one eighth of an inch.

This

This species is common on stones, shells, and *algæ*, on most parts of our coast.

A variety is not unfrequent with the mouth erect, and sometimes one or two volutions turning a little spirally upwards. These, however, must be considered as accidental distortions, by being obstructed in their general growth.

Animal a *Terebella*, with branched, ciliated *tentacula*, and a clavate, or sub-funnel shaped proboscis, usually of a pale colour.



Serpula Spirillum. *Lin. Syst.* p. 1264.

Gmel. Syst. p. 3740.

Martini Conch. i. t. 3. f. 20. C. D.

Turt. Lin. iv. p. 602.

2.

SPIRILLUM.

S. with a sub-pellucid, glossy, white shell, with two or three sub-cylindric whirls a little wrinkled: these are most commonly placed laterally; umbilicated in the centre, and sometimes pervious; but frequently the mouth turns upwards, and not uncommonly the volutions rise spirally upon each other, attached by the smaller end. Diameter one line.

This species has much the habit of the preceding, but is distinguished from it, by its glossy appearance, being more cylindric, and not spreading at the base. It is

S s s 2

found

found on some species of *algæ*, seldom on stones, shells, or crustaceous animals, like the last, and rarely, if ever, in company with that shell.

On the *Corallina officinalis*, from Milton rocks, is found in great abundance, a minute species of *Serpula*, differing so little from *S. Spirillum*, except in size, that we dare not give it a distinct place, though we are inclined to think it is really different, as it never grows above one third the size of that shell. Although this is found to inhabit the same species of *Zoophyta* as *S. minuta*, yet they are rarely found together.

This very intricate class of shells requires a thorough knowledge of their animal inhabitants; and which, in the smaller species, is attended with a considerable difficulty, for even when collected, put into sea water immediately, and examined upon the spot, few appear to protrude themselves sufficiently for critical notice: indeed it must be admitted, many of the spiral kind are inhabited by animals of very similar appearance.

3.

GRANULATA.

Serpula granulata. *Gmel. Syst.* p. 3741.

Turt. Lin. iv. p. 604.

Don. Br. Shells. iii. t. 100.

Serpula fulcata. *Lin. Trans.* iii. p. 254. (*Adams.*)

Turt. Lin. iv. p. 608.

.S. with

S. with an opaque, white shell, with two volutions, deeply grooved longitudinally, or in a spiral direction, and transversely wrinkled, especially in the furrows: aperture round. Size of the *Spirorbis*.

This species bears some resemblance to *S. heterostropha*, but is at once distinguished by the whirls not being reversed: the two *fulci* are much deeper, making the upper part of the shell more strongly tricarinated: the inner volution is nearly obsolete, only being marked by the third, or interior ridge.

This is also much more rounded at the top, with only an *umbilicus* in the middle; whereas the other is concave at the top, and the interior volutions conspicuously tapering to a fine point, within the depression. In colour and size too they also differ; this is of a white, like glass enamel, but not so glossy; whereas, the *heterostropha* is of a dull brownish, or dirty-white, and never grows to half the size.

We have found this species in great abundance on the rocks, as well as on the under side of loose stones at *Milton*; and sometimes on old shells from other parts of the coast of *Devonshire*, especially *Arca pilosa*; and have received it from *Guernsey* on *Haliotis tuberculata*, specimens of which we have seen perfectly covered with it, but sometimes in company with a species of *Serpul*, very different from any of the genus hitherto described. It
has

has one very thick, rounded, glossy, white volution; very convex, and wrinkled transversely, with a minute *umbilicus* at the top, and sometimes only a future.

Not having ascertained this to be truly *British*, we cannot give it a distinct place in this work.

Animal a *Terebella*, of a buff-colour, with ten ciliated rays, and a sub-funnel shaped proboscis at one side, of the same colour, with a brown margin, ciliated, hyaline.



4.

CARINATA.

S. with a dull, opaque, white; spiral shell; the outer whirl rising into a carinated ridge on the top; the middle concave, sometimes pervious; the interior volutions inconspicuous; base a little spreading: aperture round. Size about half that of the *S. Spirorbis*, from which it is readily distinguished, by the angulated shape of the exterior whirl, which is formed like *S. triquetra*, but always regularly spiral.

This we found on old valves of *Arca pilosa*, with the last, in considerable abundance; and plentiful in *Salcmob* bay, on *Pinna ingens*, and many other shells, especially *Trochus cinerarius* and *parvus*, unmixed with any other species.



5.

CORRUGATA.

S. with a strong, spiral, white shell, roughened by transverse wrinkles; a small portion of the second volution
tion

tion only visible: centre umbilicated: base very little spreading: aperture orbicular. Diameter about one eighth of an inch.

This species is not uncommon on the slate rocks at *Milton*, and sometimes on the under side of loose fragments, in company with *S. heterostropha*. It is a much stronger shell than *S. Spirillum*, and never exposes so much of the interior volution; and, though more wrinkled, possesses a superior gloss, when cleared from extraneous matter.

Animal orange-red, with eight, greenish, ciliated rays; and a sub-funnel shaped proboscis, of the same colour.



6.

*S. testa regulari rotundâ pellucida, tribus anfractibus. Lin. CORNEA.
Trans. v. t. 1. f. 33. 34. 35. (Adams.)*

Obs. Brownish horn-colour.

Shell regular, rounded, pellucid, with three whorls.
Turt. Lin. iv. p. 608.



S. with a strong, spiral shell, of a dull dirty-white colour, with two or three reverse volutions placed laterally, furnished with three longitudinal ridges, one along the back, and another on each side, roughly wrinkled transversely: the base is flat, and somewhat spreading: HETEROSTRO-
PHA.

ing: aperture orbicular, and invariably placed opposite the fun's apparent motion. Diameter not a line.

Is not uncommon upon *oyster* and other shells, and upon *algæ*; sometimes in company with *S. Spirorbis*, but from which it is readily distinguished by the longitudinal ridges, and by the contrary turn of the volutions

Is found in some parts of *Kingsbridge* bay, on the under side of slate stones, between high and low water-mark, in such vast abundance, that the surface of the stones is covered with them; and in this situation are unmixed with any other species: possibly the sub-saline quality of the water so far up this inlet, at ebb tides, is not congenial to its congeners, for we never found any of the other *Serpulæ* so far up.

S.

SINISTRORSA.



Serpula. Walk. Min. Shells. f. 13. 14.

S. with a semi-pellucid, glossy, white shell, with two or three reversed volutions usually placed lateral, but sometimes coiled upon each other: it is somewhat wrinkled transversely, but has no longitudinal irregularities: aperture orbicular. Diameter one line.

The form of this species is much like *S. Spirillum*, but is at once distinguished from it, by the aperture turning the contrary way: it has the same sub-pellucid appearance

ance as that shell, and when recent, has a tinge of red, from the colour of the animal, which is scarlet.

From being a *heterostrophe* shell, it might be more readily confounded for *S. lucida*, but is double the size, not so pellucid, and is broader at the base; this, too, is principally found on crustaceous animals; the other is peculiar to *Sertularia*, especially *S. abietina*; and neither is found in any one instance, to inhabit the place of the other.

Mr. WALKER has figured two, which we consider as only this shell in different stages of growth; he describes them as differing only in the number of spires, one having four, the other two; the last of which he expressly says, is found on *lobsters*. Both are figured as reversed species, a circumstance omitted in the description, but sufficient to confirm our opinion, especially, as we have never observed this shell attached to any thing on our coasts but the common *lobster*, *Cancer Gammarus*, and *spiny lobster*, *C. Homarus*, taken on the south coast of *Devon*.* It does not constantly occur on those animals, but is sometimes thickly clustered together on various parts of the same subject.



9.

S. with a very small, spiral shell, of a dirty-white colour, with two or three lateral volutions, wrinkled transversely:

T t t

MINUTA.

* On the *Guernsey* coast is sometimes found to inhabit *Haliotis tuberculata*.

versely: sometimes it has a slight, longitudinal furrow, on each side, forming a ridge, or *carina*, along the back. Diameter a quarter of a line.

This, very minute species, is also an heteroclitical shell, and not easily distinguished from *S. heterostropha*, except by its inferior size, rounded base, and habits: this affects only the *Corallina officinalis*, (ELLIS *Coral. tab. 24. f. 2.* and *Zoophytes, tab. 23. fig. 14. 15.*) frequently in abundance, both on stalks and branches.

This *Coralline* is plentiful on the rocks about *Milton*, which are partly of the same stony nature, on which *Serpula heterostropha* is found; but none of that species occur on the rocks contiguous to this *Coralline*; indeed the *S. heterostropha* is rarely exposed, but lies concealed, affixed to the under part of the loose, flat, slate stones: this, on the contrary, is always exposed to the rude action of the waves.

The young of this, as well as most of the longitudinally-fulcated, or ribbed species, are quite smooth, and may be easily mistaken.

Animal a *Terebella*, with ciliated feelers, and clavated proboscis, varying in colour from brown to green.

10.
LUCIDA.

◆

.Serpula reflexa. *Lin. Trans. v. t. 1. f. 31, 32?* (*Adams.*)
Turt. Lin. iv. p. 608.

.Serpula

Serpula vitrea. Gmel. *Syst.* p. 3746?

Turt. Lin. iv. p. 607.

Ellis Zooph. p. 37.

S. with an irregular, pellucid, glossy, white shell, always more or less spiral; sometimes lateral, with two or three whirls; in others the volutions turn upon each other, with the aperture projecting upward, and not unfrequently the spires are unconnected. Diameter half a line.

This is at once distinguished from all other species, by its extremely smooth, glossy, and vitreous appearance.

It is by no means an uncommon shell, but we believe is peculiar to some species of *Sertularia*, especially *S. abietina*, on which it is almost a constant attendant;* and sometimes on *S. argentea*: is gregarious and very numerous on the branches of those *Zoophytes*, which are thrown up on most of our coasts, especially in the west of *England*: and we have been assured by Mr. BOYS, (who sent it to us by the name prefixed,) that it is not less common on the coast of *Kent*, on *S. abietina*.

This, though subject to much variety in shape, will be always found to turn its aperture towards the apparent motion of the sun, and consequently is a *heterostrophe* shell.

T t t 2

Animal

* ELLIS says this *Sertularia* "is frequently infested with little minute shells, called *Serpulas*."

Animal red, with plumose *tentacula* of a pale colour, and two brown spots on the head.

11.

REVERSA.

S. with a sub-cylindric, rugose, white shell, much wrinkled transversely, more or less spiral, and tapering to a small point, but subject to great variety in its turns and windings; sometimes, three or four whirls, pretty regularly placed laterally, making a diameter of half an inch: others have the smaller end projecting, and the larger end coiled, either lateral or upon each other, and open in the middle. Sometimes, the small end turns contrary to the rest of the shell; but it is remarkable, in a species so irregular in growth, that the aperture should almost invariably turn in the reversed direction. Diameter at the larger end, one tenth of an inch.

This is sometimes taken on the coast of *Devonshire*, upon the *Pecten opercularis*, and rarely on crabs.

The animal is a *Terebella*, with branched, ciliated *tentacula*, spotted with crimson, which, when spread, almost surrounds a double funnel-shaped proboscis, placed one within the other, the stalk of which is long and slender, and originates on the left side below the *tentacula*: this in some is green, others reddish, the interior funnel is cut in deep longitudinal striæ; external one ciliated round the margin: on the right side, corresponding with the proboscis, is a short, cylindric appendage.

** CON-

** CONTORTED, IRREGULAR.

12.

Serpula vermicularis. *Lin. Syst.* p. 1266.

VERMICULARIS.

Gmel. Syst. p. 3742.*Br. Zool.* No. 159.*Turt. Lin.* iv. p. 605.*Da Costa.* p. 18. t. 2. f. 5.Serpula intricata. *Lin. Syst.* p. 1265.*Gmel. Syst.* p. 3741.*Br. Zool.* t. 91. f. 158. (fig. misplaced)*Turt. Lin.* iv. p. 603.*Martini Conch.* t. iii. f. 24. A?

S. with a cylindric, white shell, gradually tapering, generally terminating in a fine point, and wrinkled transversely.

Nothing has puzzled the conchologist more than the four species of *Linnæan Serpulæ* under the denomination of *Vermicularis*, *intricata*, *triquetra*, and *contortuplicata*.

We have collected a vast quantity of these *Serpulæ* single and grouped, angulated and cylindric, with all the intermediate gradations, which connect them so nearly, that were it not for the animals, we should have been induced to have considered them as one and the same species: we have, however, by the animals more than by the shells, formed them into two species: namely, *vermicularis* and *triquetra*.

This

This is to be met with from the size of a sewingthread to that of a swan's quill, as frequently in groops, twisted and contorted in all directions, as single; and is never observed to spread at the base, or to possess the smallest degree of *carina* along the back; and is generally attached its whole length to some other body: this circumstance, independent of the difference in the animals, is the only leading character, by which it may be known from *S. tubularia*, which is attached only in part towards the smaller end, and usually ascends in a considerable angle.

We have seen both these shells most complicatedly entwined with each other, and mixed with *S. triquetra*; and some of the last possessing so little appearance of a ridge along the back, that had not the animals been consulted, it would not have been possible to have divided them. As the animals therefore are the only certain criteria, these shells, as well as many others of this intricate genus, will ever be confounded in cabinets.

It may be thought, that although we have brought four of the *Linnæan* species into two, in some instances we have multiplied others of the *British Serpulæ*: to this it can only be said, that as far as human fallibility will admit, care has been taken to fix characters of distinction, from shape, habits, or animal; except, therefore, in *S. reversa*, we have not a doubt but those described, are really distinct. The inhabitant of that shell, we must
 confess,

confers, is so very similar to the animal of this, that a reference will save the trouble of a repetition: the circumstance of that shell being always coiled in a circular form, and generally in a reversed manner, added to its solitary habit, are strong presumptive evidence of distinction.



Serpula triquetra.

Lin. Syst. p. 1264.

Gmel. Syst. p. 3740.

Martini Conch. i. t. 3. f. 25.

Turt. Lin. iv. p. 603.

Baster Opusc. i. t. 9. f. 2. A. B.

Br. Zool. No. 156.

Serpula vermicularis.

Ellis Corall. t. 38. f. 2.

Don. Br. Shell. iii. t. 95.

Serpula angulata.

Da Costa. p. 20. t. 2. f. 9.

Serpula contortuplicata.

Lin. Syst. p. 1266.

Gmel. Syst. p. 3741.

Turt. Lin. iv. p. 604.

Br. Zool. No. 158. t. 91. f. 157.

(figure misplaced.)

13.

TRIQUETRA.

S. with a strong, opaque shell, irregularly twisted and contorted; sometimes nearly straight, or only a little flexuous, roughened with transverse wrinkles, and usually more or less carinated: in some the dorsal ridge is much elevated, and the base spreads so much as to give it a triangular appearance; and, not unfrequently, there are two other smaller ridges along the sides, one on each side the dorsal *carina*.

In

In many instances, however, the ridge along the back is so nearly obsolete, especially in old shells, and such as are grouped, that they would with difficulty be separated from *S. vermicularis*, were it not for the animal; such have been generally confounded for that species, and is figured by ELLIS; but the single, trumpet-shaped proboscis, of the animal, forbids it to be the *S. vermicularis*.

That figured by DONOVAN, appears also to be a *triquetra* for the same reason, but the *tentacula* of the animal are wanting in this figure; though that part is very well represented by ELLIS.

It is with no small difficulty, and in some degree uncertainty, that we have placed the synonyms to this and the preceding species, as heretofore the animals have not been attended to sufficiently, to form the best and surest character of distinction.

If the *triquetra*, and the *Linnæan contortuplicata* be carefully examined, the animals will be found to be the same, possessing only a single, trumpet-shaped proboscis, as represented by ELLIS for the *Vermicularis*: and it will be observed, that all the shells inhabited by such animal, are, whether grouped or single, more or less furnished with a dorsal ridge, though in some of the larger specimens it is scarcely to be discerned, or at least might be passed unnoticed. On the contrary, the *vermicularis*
and

and the *Linnæan intricata* never possess the smallest degree of *carina*, and the animal, as before remarked, has a double-trumpet, or funnel-shaped proboscis.

The *Serpula triquetra* is most times of a dirty-white, but sometimes red, or tinged with that colour; such we have in large groups as well as single, a circumstance never having occurred to us in the *vermicularis*.

It is, like the last, equally plentiful on all our coasts, adhering to stones, old shells, crustaceous animals, timber, and various other substances: a specimen in our cabinet, on a piece of glass bottle, is more than commonly spread at the base, as if it was requisite to take a firm hold of so smooth a surface.

The *tentacula* of the animal are two, plumose, or furnished with numerous, ciliated fibres, varying in colour, being barred with blue, yellow, brown, or red, and all the intermediate shades: the trumpet-shaped proboscis is finely striated, and the margin crenated.



14.

S. with a round, taper, opaque, white shell, slightly wrinkled transversly; the smaller end is usually sub-convoluted irregularly, sometimes only flexuous; this part is fixed; the larger part is detached frequently for half its length, and ascends in a considerable angle from the base, though rarely perpendicular: the erect part is

V v, v

nearly

TUBULARIA.

nearly straight, or slightly flexuous; but always turning with the sun: aperture orbicular. Diameter at the larger end two-tenths of an inch, gradually tapering to a fine point; length four or five inches.

This species has probably been confounded with the *S. vermicularis*, from which, indeed, it might be difficult to separate it, was it not for the great difference in the animals. We have, however, observed that *S. vermicularis* is usually attached to some other body its whole length, and never reflects in the manner of this.

It is by no means common; those we procured alive were at *Torcross* in *Devonshire*, where an opportunity offered of examining the animal, by putting the shells into a glass of sea water as soon as they were dredged up: these were affixed to old bivalves, the finest specimens were on that of the *Mastra lutraria*: two had their base entwined, and the larger ends attached longitudinally, ascending in an angle of thirty degrees.

The animal is an *Amphitrite*, with between fifty and sixty annulations; the head long, white, barred with pink and green; on each side a loose, scalloped, transparent membrane, capable of contraction and expansion, and frequently surrounding the under part: *tentacula* two, beautifully feathered, each originating from a single stalk, placed near to each other on the fore part of the head: on one side of each of these stalks are long fibres,

fibres, placed in regular order; these again are furnished on each side with finer fibres. When the animal withdrew its *tentacula* it became somewhat convoluted, as the fibres closed, and turned a little spiral up the stalk: their colour pale yellow, or yellowish-white, the fibres, or *pinnæ*, annulated with pink, so as to form regular, semi-circular lines, when the plumes were spread.

*** CONCAMERATED.

Serpula Nautiloides. *Gmel. Syst.* p. 3739?

Turt. Lin. iv. p. 602?

Nautilus lobatulus. *Turt. Lin.* iv. p. 307.

Adams Microsc. t. 14 f. 36.

Walk. Min. Shells. f. 71.

15.
LOBATA.

S. with a compressed, spiral, lobated shell; shape various, sometimes roundish, others oblong; above convex; with six, seven, or eight lobes: beneath flat; the interior volution only marked by one or two small elevations, and frequently not visible: colour white, or yellowish: aperture minutely small, scarce definable. Diameter barely one line.

This species has much the habit of a *Nautilus*, the interior part being divided into unequal, parallel concamerations.

We originally received it from Mr. BOYS, for WALKER'S shell above quoted; have since found it adhering to the roots of *fuci*, common on the *byssus* of *Pinna ingens* on the coast of *Devonshire*, and sometimes on shells. Is found also at *Sandwich* and *Whitstable* in *Kent*; where, as well as on many of our arenaceous shores, it may be found dead amongst the finer sand.

The circumstance of its being sessile, or fixed to other bodies in a living state, forbids it claiming a place amongst the *Nautili*.

GEN. XXXIV.

VERMICULUM.

Animal a TERESELLA?

SHELL, univalve, shape various: not attached, or adhering to other bodies.

We have been induced to separate the *Linnæan* class of *Serpulæ*, not only from their dissimilitude in structure, but because many of them do not come under the generic character, (of being fixed to other bodies.) Those, therefore, which are independant, or not attached to other bodies, we have formed into a new genus, under the title of *Vermiculum*. These, again, might with propriety be divided into two distinct genera; those which are convoluted, or sub-convoluted, and those which are straight, and of a bottle shape: the latter of which Mr. WALKER has very significantly distinguished by the name of *Lagena*. The number of these, however, as yet discovered are inconsiderable, we shall therefore only make them into two divisions of the same genus.

The

The animals of two or three species we have examined, are not the least like any thing observed in the genus *Serpula*; when alive they rarely protrude any thing beyond the shell; but when recently dead, a fleshy bulb, without any visible *tentacula*, or feelers, makes its appearance; but hitherto we have not been able to fix any thing as definable characters.

* SUB-CONVOLUTED.

L.
INCURVATUM.

Serpula incurvata. *Turt. Lin.* iv. p. 609.

Adams Microsc. t. 14. f. 7.

Serpula recta anfractibus tribus contiguis regulariter involutis.

Walk. Min. Shells. f. 11.

The strait horn Wormshell, with three close intorted spires at the tip; the colour white, semi-transparent. From *Sandwich*, rare.

This shell is somewhat in shape like *Nautilus semilitus* of LINNÆUS; but is perfectly smooth, cylindric, and has neither *Syphon* in the aperture, nor internal conca-merations. Length scarce one line.

2.
PERVICUM.

Serpula recta umbilico pervio anfractu apicis unico involuto.

Walk. Min. Shells. f. 12.

The single-spired strait horn Wormshell, with a per-
vicious

vious *umbilicus*: the colour whitish, transparent and glossy. From *Reculver*, very rare.

This is rather smaller than the last, and differs from it in the turn of the lesser end, where it only makes one revolution, which is open or pervious.



Serpula bicornis,

Turt. Lin. iv. p. 609.

BICOORN.

Adams. Microsc. t. 14. f. 2.

Serpula bicornis ventricosa. Walk. Min. Shells. f. 2.

The bellied semi-lunar Wormshell; colour white, opaque and glossy. From *Sandwich* and *Reculver*, though not common. Length one line.

We received this species from Mr. BOYS for that described by WALKER, the figure of which does not exactly express the formation of the shell, which represents only two compartments, whereas it has three; the middle one is extremely small, sometimes raised, at other times depressed: is sub-oval, compressed, and striated longitudinally on the longer side from the aperture; the other side is smooth: it contracts towards the mouth, which is very small and orbicular.



Serpula perforata. Turt. Lin. iv. p. 609.

4.
PERFORATUM.

Adams. Microsc. t. 14. f. 3.

Serpula bicornis umbilico perforato. Walk. Min. Shells. f. 3.

The

The semi-lunar perforated Wormshell: the colour white, opaque and glossy. From *Sandwich*, very rare.

The shell, which Mr. BOYS favoured us with for that given by WALKER, was not perforated, and differed so little from the preceding, that we are inclined to believe, it is no other than a mutilated specimen of that shell.

We have found it in *Cornwall*, and sometimes with the small interior compartment worn off, which gives it the appearance of being naturally perforated.



5.

INTORTUM.

Serpula subovalis intorta umbilico pervio. *Walk. Min.*

Shells. f. 1.

Serpula Seminulum. *Lin Syst.* p. 1264?

Gmel. Syst. p. 3739?

Turt. Lin iv. p. 602?

Martini Conch. i. t. 3. f. 22. a. b?

Gualt. t. X. f. S.

Serpula ovalis.

Lin. Trans. v. t. 1. f. 28. 29. 30.

(*Adams.*)

Turt. Lin. iv. p. 608.

V. with a sub-oval, compressed, opaque, glossy-white shell, composed of three, and sometimes four, compartments; the interior ones varying in shape and size; some are longer in proportion to their breadth than others: these have usually only three well defined compartments: but the larger and more sub-orbicular shaped variety

angulated; margin in live shells yellow. Diameter about half a line.

This species is not half so common as the last; but is found in sand on several of our shores.



5.
LACTEUM.
Tab. 14. f. 9.

V. with an oblong, oval, opaque, glassy, white shell, somewhat compressed; on one side a single longitudinal suture, that seems to divide the shell into two parts: on the other side, the middle compartment is surrounded by a faint depression, that separates it from the exterior one, and is more elevated; aperture a little produced, oval; margin yellow. Length not half a line.

In sand from *Salcomb bay Devonshire*: rare.

The five last described species have somewhat the habit of *Nautili*, though not regularly concamerated, or divided into chambers: they are contracted at the angulated turns, which form the sub-volutions.

** BOTTLE-SHAPED, NOT CONVOLUTED.

5.
LACTEUM.

Serpula lactea.

Turt. Lin. iv. p. 609.

Adams Microsc. t. 14. f. 4.

Serpula tenuis ovalis lævis. Walk. Min. Shells. f. 5.

The

The thin, smooth, egg-shaped Worm-shell: the colour pellucid, with milky veins. From *Sandwich*, not common.

We have found this species on the coast of *Devonshire*. It is not compleatly egg-shaped, as Mr. WALKER describes it, but is somewhat compressed; the white lines mark the compartments, which appear to be four: the border round the shell is also opaque white: aperture extremely small. Length half a line.



9.

Serpula (Lagena) striata fulcata rotunda. *Walk. Min. Shells. f. 6.* STRIATUM.

Serpula Lagena. *Turt. Lin. iv. p. 609.*
Adams Microsc. t. 14. f. 5.

V. with a pellucid, glossy, white, sub-oval shell, with a slender, produced mouth; finely striated longitudinally, very conspicuous by being more opaque than the rest of the shell: shape like a *Florence* flask: aperture small, orbicular. Length not half a line.

This elegant species is mentioned by Mr. WALKER to be rare at *Sandwich*, *Reculver*, and *Shepey*. We have received it from Mr. BOYS, and have found it in fine sand on the south coast of *Devonshire*.



10.

Serpula (Lagena) lævis globosa. *Walk. Min. Shells. f. 8.* GLOBOSUM.

The smooth round Flask Wormshell: the colour white and transparent. From *Sandwich*, very rare.

X x x 2

This

This seems to differ from the last in being destitute of striæ, and in the mouth not being lengthened, but terminating in a small round aperture; and is rather less.

11.
LÆVE.

Serpula (Lagena) lævis ovalis. *Walk. Min. Shell.* f. 9.

The smooth oval Flask Wormshell: the colour bluish-white, very transparent like glass. From *Sandwich*, very rare.

This differs from the last in being more oblong, and in having a produced, cylindric mouth, like the *striata*.

12.
MARGINATUM.

Serpula (Lagena) marginata. *Walk. Min. Shells.* f. 7.

The bordered Flask Wormshell: the colour white, transparent and glossy. From *Reculver*, very rare.

This is in shape like the *globosum*, rather less, a little compressed, and distinguished by an elevated ridge, or margin, that surrounds the shell longitudinally.

We have found it in sand on the coast of *Devon*: but never with the mouth so much protruded as Mr. WALKER's figure represents.

13.
RETORTUM.

Serpula (Retorta.) *Turt. Lin.* iv. p. 609.
Adams Microsc. t. 14. f. 6.

Serpula

Serpula (Retorta) rotunda marginata cervice curvatim exerto.
Walk. Min. Shells. f. 10.

The marginated Retort Wormshell; the colour white and opaque. From *Sandwich* not common.

This species differs from the last in having a produced, sub-cylindric, recurved mouth; the body is more orbicular, and the margin that furrounds the shell more strongly defined. The specimen we received from Mr. Boys is a little compressed, and has a small depression, or *sub-umbilicus*, on each side near the centre. Diameter not half a line.



14.

V. with a bottle-shaped, smooth shell, furnished with PERLUCIDUM. six, equidistant, longitudinal ribs, and a small knob at the base; neck very long, sub-cylindric: aperture extremely small: colour white, transparent, and glossy. Tab. 14. f. 3.

Length not one tenth of an inch. Found at *Seafalter*.



15.

V. with an Urn-shaped, smooth, glossy, semi-transparent white shell; at the base a slender appendage, or knob: aperture produced by a conic neck. Tab. 14. f. 1.

Length scarce one line. Found in sand from *Shepoy* island.

V. with

16.

SQUAMOSUM.

Tab. 14. f. 2.

V. with a sub-globose shell, marked with undulated
 striæ, like the scales on a fish: aperture a little produced

A minute species from *Seafalter*.

For the three preceding species, we are indebted to
 Mr. BOYS, who, with his usual liberality, favoured us
 with excellent drawings, with an assurance, that he had
 seen the shells from which they were taken.

GEN. XXXV.

TEREDO.

*Animal usually described as a TERESELLA.**

SHELL cylindric, taper, flexuous, lodged in woody substances; with two testaceous, hemispherical valves, anteriorly truncated, covering the head of the animal; and two others, of a lanceolate shape, near the extremity of the tail.

- 1.
- Teredo navalis. *Lin. Syst.* p.1267.—*Gmel. Syst.* p.3747.1. NAVALIS.
Martini Conch. t. 1. f. 11.
Planc. Conch. 17. No. 2.
Sellius Hist. Natur. Teredinis. 1733.
Pult. Cat. Dorset. p. 53.
Phil. Trans. 1741. No. 455. t. 2. (*Baster.*
Br. Zool. No. 160.
Turt. Lin. iv. p. 609.
 Serpula Teredo. *Da Costa.* p.21.

f. with

* The animal certainly has none of the characters of a *Terebella*. It has neither *tentacula*, *branchiæ*, tubercles, nor *fasciculi*; and is distinct from any testaceous animal we are acquainted with.

T. with a thin, brittle, flexuous shell, of a whitish colour, tapering to the extremity: aperture orbicular; inside smooth, pervious: at the smaller end the shell becomes thick and strong, and is furnished within with plates or *laminæ*, which contract that part very considerably, and leave a very small opening: the anterior valves, attached to the head of the animal, are of a hemispheric form, one half the front projecting in a sharp angle, and somewhat pointed; thin and brittle, finely, and regularly striated longitudinally on the front angle, which terminates in a regular line backward, where the striæ conform to the angular shape of the valve, and run transversely across the middle, or truncated part; this part is covered with a light-brown *epidermis*; the hinder part, or that which is attached to the animal, is white and smooth.

The inside of each valve is white, furnished with a long, flat, curved tooth, projecting inwards under the hinge, as in most the *Pholades*, and a short, lateral tooth at the extremity of the hinge, corresponding in each valve: the margin, opposite the hinge, runs to an acute angle, at the point of which, in each valve, is a small knob, which comes in contact when the valves are brought together; and as this is the only bearing point besides the hinge, it may readily be conceived the sides are extremely open.

Near the extremity of the tail of the animal, are fixed

two lanceolate plates, or valves, one on each side; a little concave on the inside, and rounded at the end: the office of which is to close the extremity of the tube at the thickened part. These seem to be properly the shells of the animal, being attached to it. The tubular, testaceous case, or sheath, which lines the hole made by this animal in wood, though necessary to its existence, appears only to be formed as an apartment, in which it may move with ease and security; for it is observable, that no two tubes ever touch each other, although the *lamina* of wood between them is frequently not thicker than paper. The tube is seldom so long as the animal, as the interior part of the perforation is usually not lined with it for two inches or more: the smaller end is always even with the surface of the timber perforated, but so small as not easily to be discovered; but sufficient to admit the surrounding element, and which the animal can regulate by the posterior valves.

It has been erroneously imagined, that the animal perforates wood by means of its anterior valves; but there is no reason for ascribing such a property, because their shape has been likened to an auger, when we find all the *Pholas*, the *Mytilus rugosus*, the *Donax Irus*, and many others perforate not only wood, but even the hardest lime stone, without the assistance of their shells, a part impossible to effect it.

It is observable the *Teredo* bores across the grain of the
 Y y y wood

wood as seldom as possible; for after it has penetrated a little way, it turns, and continues with the grain, tolerably straight, until it meets with another shell, or perhaps a knot, which produces a flexure: its course then depends on the nature of the obstruction, if considerable, it makes a short turn back in form of a *siphon*, rather than continue any distance across the grain.

We had an opportunity of examining a great number of these shells in the *Dock-Yard* of *Plymouth*; where every means have been tried to prevent the destructive quality of these pernicious animals, which are now become naturalized to the climate, and have increased considerably, though supposed to be of oriental origin.

The piles we examined had been recently taken up to be replaced with new; these we were informed, had not been under water above four or five years, and though perfectly sound and solid oak, were greatly perforated.*

It must be presumed, that the tube is lengthened as the animal's growth requires; and that it can extend the whole length of the perforation without quitting the tail; but that it cannot recede far, by reason of the increase of the anterior valves affixed to the head, and the taper
shape

* The method now adopted to preserve the timbers necessarily used about the docks, is to cover that part which is continually under water, with short, broad-headed nails, which in salt water, soon cover every part with a strong coating of rust, impenetrable to these animals: and we are assured this has been found to succeed better than sheathing with copper.

shape of the tube. This part is rarely above three-quarters of an inch in diameter at the larger end, and a foot in length, in our climate; but exceeds that in the more southern parts, from whence it was brought into our harbours to the destruction of our ships, as LINNÆUS justly observes, *calamitas navium*.

This shell has been usually placed amongst the univalves, but certainly without reason, for undoubtedly, it is as compleat a multivalve, as any other of that class, and ought to be either placed with the *Pholas*, or between that and the *Balanus*, for it has no affinity either to the *Serpula* or *Dentalium*.

GMELIN in a marginal note expresses himself thus, "*Teredines intra vegetabilia habitantes, quæ destruunt, vitæ genere, victu, et habitatione, navalis certe, ipsa valvarum vermi adhaerentium fabrica, propius ad pholades accedunt, quam ad serpulas.*"

We have, however, thought proper to leave it where LINNÆUS last placed it, for the consideration of those who may write more largely upon this branch of natural history.

It might be asked by those of less philosophic minds, why an animal should be formed wholly for destruction.

The answer is, that the greater apparent destruction, assigned to certain beings, is but the necessary link in

the great chain of nature: all, more or less, are endowed with the same inclinations, even man, intellectual man, is the most destructive of all animals.

The powers with which some of the seemingly most contemptible beings are endowed, to promote the speedy destruction of useless matter, cannot perhaps be better exemplified, than by Mr. SMEATHMAN'S curious account of the *Termes*, or what has been commonly called *White-ant*, given in the *Philosophical Transactions* for 1781, to which we refer our readers.

That the *Teredines*, as well as the *Pholades*, and many other aquatic animals were created, by the Father of the Universe, for equally beneficent purposes in that element cannot be disputed; for though they may seem to impede, and even destroy the operations of man in some degree, yet, they are of such importance in the great scale of nature, that, as it has been observed, it would not be difficult to prove, we should feel the want of one or two species of larger quadrupeds much less, than one or two species of these despicable-looking animals.

Were it not for these, whose office it is to perfect what nature has already begun on land, either by the means of insects, or tornadoes, which by the aid of rapid torrents would fill the tropical rivers with timber, and not only choke them up, but even endanger the navigation of the neighbouring seas, and perhaps the distant ocean;
for

for without such powerful agents of dissolution, wisely created, such trees might under water endure for ages.* Whereas, nothing can more plainly demonstrate the power of an all-wise Ruler of the Universe, than the works assigned to these little, and seemingly despicable, beings, whose business is to hasten the total destruction of all useless matter, and proves them a necessary, connecting link in great nature's chain, so beautifully described by STILLINGFLEET.

* In the *Leverian* Museum is an oak stake, which is said to be one of those driven into the river *Thames* on the invasion of JULIUS CÆSAR, eighteen hundred years since. Timber is frequently taken out of bogs, which have probably lain since the deluge, and perfectly sound.

 GEN. XXXVI.

 SABELLA.

*Animal various, AMPHITRITE, TEREBEL-
LA, SPIO, and NEREIS?*

THE animal inhabiting some of the *Linneæan Sabellæ* has, by later authors, been considered as an *Amphitrite*; and to this new genus the *Sabella Penicillus* and *granulata* have been removed.

Before we enter upon the descriptions of the several species of *Sabella* indigenous to the *British* coasts, it may not be improper to remark, that in placing them amongst shells, we have deviated from our own opinion, and have followed the system of LINNÆUS, and other later writers, in continuing this genus amongst the *Vermes Testacea*.

The tubes in which the animals of this class are enclosed, are all, more or less, composed of extraneous matter agglutinated together, such as sand, gravel, and
broken

broken shells, of a finer or coarser texture, according to the nature of the animal inhabitant; and not prepared by a testaceous secretion from the body of the animal, forming a compact, solid substance, the true character of a shell.

Amongst the *Sabellæ* of LINNÆUS many *larvæ* of sub-aquatic flies are placed, several of which are to be found in our rivers and stagnant waters: but these, deriving their origin from winged insects, have no claim of affinity to a *Sabella*, much less to a place in Conchology.

We are not aware that any true *Sabella* is found in fresh-water; and certainly no winged insect has yet been discovered, to perform its change from the *larva* to the perfect fly, in salt-water.

GMELIN has enumerated a great many *Sabellæ*, which inhabit fresh-water, principally on the authority of SCHROETER; many of which are varieties only of the same imperfect insect, the *larva* of *Ephemera vulgata*, some that of *Phryganea*, and perhaps other *Neuropterous* insects.

The tubes, or cases, in which these *larvæ* are concealed, are formed of whatever extraneous matter is near, and which is increased as its growth requires: this accounts for the many elegant varieties of such tubes.

Some

Some are composed wholly of small shells of various kinds; others of fragments of shells mixed with sand, bits of stick, stalks or fibres of plants; and it is remarkable, that some species attach pieces of stick longitudinally, while others bite off short pieces and place them transverse, like basket-work, some placing them triangular, others quadrangular, or lozenge-shaped. But the most beautiful variety, is that found in waters abounding with *Helix nautilus*, with which we have seen these cases compleatly coated in a regular and most elegant manner, with their apertures outwards, and some of the animals yet alive. Another variety, coated with fine sand, and minute bits of shining *mica*, found in *Cornwall*, and other streams running over micaceous granite, is deserving notice: but we must not enter further on a subject which more properly belongs to Entomology.

Why a part of the *Linnæan Sabellæ* should be removed into the *Mollusca* class of *Vermes*, and others left amongst the *Testacea* is difficult to determine; for those whose inhabitants are *Nereis*, have no more claim to a place amongst shells; than such as are inhabited by an *Amphitrite*, or *Terebella*; and might certainly, with as much propriety, be transferred to their proper animal class.

That the *Sabella* genus should be wholly expunged, and the several animals placed in their respective *genera* amongst the *Mollusca*, there can be no doubt; for those, whose cases are made up of agglutinated fragments

ments of shells the *exuviae* of other animals, are as little deserving a place amongst *Testacea*, as those formed wholly of sand, or composed of both: such are equally extraneous substances, foreign to the animals, and are only attached by a *mucus*, or glutinous secretion, which forms the internal coating, and is the only part of such tubes really belonging to the animals; and which, in any species cannot be termed more than coriaceous, but more commonly membranaceous, of a thin, flimsy, flexible substance when moist, but extremely fragile when dry.

It may be asked why, as we do not consider the *Sabella* in the least connected with shells, nor even deserving a separate place in the System of Nature, we have deviated from our hypothesis. To this we should reply, that we have only followed the example of greater naturalists, at the same time submitting our observations to those, who may hereafter take up the subject on a more enlarged scale.

We are aware it will be said, that shells are only the coverings of animals; granted; but they are really testaceous, wholly secreted, and prepared by the animals, and as much a part of them, as the covering of a tortoise, which is inseparably fixed. We admit, however, that it is an imperfect class in the *Systema Naturæ*, and was originally rejected by LINNÆUS as such: but as it was impossible to bring their several animals into any

regular system, from the very little knowledge hitherto obtained of them; and as the more durable parts of such animals were so easily preserved, and so extremely coveted from their attractive beauty, it became necessary to throw them into some systematic arrangement, in order that the species might be ascertained, and names given them, for the more ready communication of naturalists on the subject. Indeed, could we ascertain the several species of animals inhabiting shells, we are inclined to believe, they would still continue to be divided and subdivided by the form and structure of their coverings, as much as the *Tortoise*, *Echinus*, or the more crustaceous animal the *Cancer*, whose bones are external. It must, however, be admitted, that the animal inhabitants of shells may, as far as they can be ascertained, be an essential aid in discriminating species.

The animals inhabiting shells, as far as we yet know, are confined to a very few genera, as may be seen in our generic description of such; some of which are found in a molluscous state, and are properly separated. On the contrary, as the tubes, or cases, usually called *fabellæ*, are of that fragile, imperfect, and perishable nature without being readily definable; a covering from agglutinated pebbles, to a thin transparent film not preservable; we must systematize the animals and not their occasional coverings, (from which many of them retire at pleasure, and all independent of them) and endeavour to make such subservient to specific purposes only.

Let

Let us ask, in return, if it is not inconsistent with a systematic arrangement, to describe the animal in one place as a *Vermes Mollusca* inhabiting a tube, and in another place as a *Vermes Testacea*, or *Sabella*, inhabited by an *Amphitrite*, or a *Terebella*? Such, however, is the case in some modern systems,* and must be where the animal is capable of living independent of its case or covering, and may sometimes be found destitute of it in perfect vigour.

Surely, it would have been a much more natural arrangement, to have placed the *Echinus* in the order *Testacea*, than the *Sabella*: indeed, some authors have considered these as shells; but in the *Linnæan* system are placed amongst the molluscous animals, though covered with a shell.

We shall not, however, enter more largely on this subject in a monographical work; it is for those to consider who write a general system, whether the *Sabella* should not be expunged from the book of nature as a substantive, and only described with their several animals, with a view to specific distinctions: and by so doing, all the cases of *larvæ* belonging to winged insects, which have been most unaccountably intruded upon the *Testacea* class, would naturally find their way to those

Z z z 2

perfect

* GMELIN has described *Amphitrite Auricoma* in its proper place as a molluscous animal, and its case amongst the *Testacea*, under the title of *Sabella Belgica*.

perfect flies to which they properly belong, and consolidate their several histories, which are now broken and divided.

Having said thus much, we shall, without further apology, proceed to the description of the several *Sabellæ* which have occurred on our shores, together with such of their animals as have come within our researches.



1.

ALVEOLATA.

Sabella alveolata.

Lin. Syst. p. 1268.*Gmel. Syst.* p. 3749. 3.*Br. Zool* t. 92. f. 162.*Turt. Lin.* iv. p. 610.*Pult. Cat. Dorset.* p. 53.Tubularia arenosa Anglica. *Ellis Coral.* p. 90. t. 36.

S. with numerous tubes placed parallel to each other, closely joined, but not interfering; composed of fine sand and comminuted shells, cemented together in an aggregate mass: the aperture of each tube is considerably expanded, and has somewhat the appearance of a honeycomb: the length of some of these tubes nearly three inches.

This gregarious species is not uncommon on many of our fine sandy shores, covering the funken rocks for a considerable space between high and low water-mark.

Mr.

Mr. PENNANT mentions it on the coast of *Anglesea*, *Caernarvonshire*, and *Yarmouth*: at this last place ELLIS also noticed it about low water-mark.

We have observed it in prodigious masses on the coast of *Caermarthenshire*, between *Laugharne* and *Tenby*; and also a little to the west of *Teignmouth* in *Devonshire*.

The animal is a *Terebella*, furnished with three series of pale, glossy bristles, set in an oval form on the head; the outer series reflect; the interior, which immediately surround the mouth, incline inwards: the body, like the rest of its congeners is provided with many tufts of bristles on each side, but the three uppermost are much more conspicuous than the rest.

Mr. ELLIS has given a very good figure of the animal magnified, and a very copious description; to which we refer the curious reader.

		2.
Sabella Penicillus.	<i>Lin. Syst.</i> p. 1269.	PENICILLUS.
	<i>Martini Conch.</i> i. t. 4. f. 32.	
	<i>Pallas Misc. Zool.</i> t. 10. f. 1.	
Corallina Tubularia Melitenfis.	<i>Ellis Coral.</i> p. 92. t. 34.	
Amphitrite Ventilabrum.	<i>Gmel. Syst.</i> p. 3111.	
	<i>Turt. Lin.</i> iv. p. 82.	
Scolopendra.	<i>Baister Op. Subf.</i> i. t. 9. f. 1. A.B.	

S. with

S. with a long, slender tube, gradually tapering to the lower extremity, which is small, and flexuous; the upper part is nearly strait; the interior part is formed of a tough, coriaceous, sub-pellucid substance, smooth within; the external covering is wholly extraneous composed of the finest particles of sand, or earthy matter, agglutinated together, forming an even, and somewhat smooth surface, of a dull brown colour, sometimes marked with a few faint wrinkles. Diameter at the larger, or open end, a quarter of an inch; length six or seven inches.

This species, not hitherto noticed as *British*, is found on several parts of our coasts, but does not grow to the size met with in the *Mediterranean*. We first noticed it on the shore at *Teignmouth*, and afterwards dredged up several, with their animals, at *Torcross* in *Devonshire*, adhering to *Ascidia Mentula*, and interwoven with *abietina* and other *Sertularia*: have also found it on the north shore, near *Poole*, clustered, and single.

The beauty of the animal inhabitant (which is an *Amphitrite*) is not to be seen in such as are brought to *England* in spirits: we must examine such in their natural element, to form a perfect idea of their extreme elegance. Those we took alive were immediately put in a glass of sea water, and by such means were kept alive two or three days, giving a full opportunity of examining them in various states. In this situation the plumose
tentacula

tentacula did not appear divided, and irregular, or one smaller than the other, as described, and figured by ELLIS, and afterwards by MARTINI, who has evidently copied from the former; but are thrown out and expanded so as to form a regular circle; the feathers, or ciliated fibres that compose the *tentacula*, are longer on the upper part than beneath. It is probable, an unnatural division of these fibres, in a preserved specimen from *Malta*, had misled the accurate eye of so great a naturalist, for if Mr. ELLIS had ever had an opportunity of examining the living animal, he would have given a much more correct and elegant figure of the beautiful plumose *tentacula*.

To Mr. HENRY BOYS of *Sandwich*, we are not only indebted for the knowledge of this *Sabella* being found at *Whitstable* in *Kent*, and not uncommon about *South-sea Castle* near *Portsmouth*, on stones at low water-mark, but for several well executed drawings, accompanied by a very correct description.

The body is flattened, long, with numerous joints and *fasciculi*; a reflected, scalloped membrane round the neck: *tentacula* two, furnished with about twenty-four long fibres, or feathers, ciliated on both sides;* these are
of

* Mr. BOYS observed twenty-four in one, and twenty-one in the other. The *tentacula* are capable of great contraction; in which state, as well alive as in those preserved in spirits, the fibres appear feathered only on one side, by reason of their closing; in this state they are represented by ELLIS.

of a pale colour, spotted with red, which, when spread, appear disposed in circles.

A *Sabella* much resembling the *Penicillus*, and the animal an *Amphitrite*, of very similar make and colour, but differing somewhat in the formation of the *tentacula*, occurred to us on the coast of *Devonshire*; whether it is a mere variety, or distinct, we are not sufficiently authorised to determine, having only seen one specimen, and that in a languid state when examined.

In this the fibres of the *tentacula* are jointed, or knotted, and besides the ciliated sides as in the other; they were verticillated at the joints, like those plants of the *Cryptogamia* class called *Equisetum* or *Horse-tail*: these joints are at regular distances.

The tube was not near so long as usual in the *Penicillus* and was partly composed of coarser materials, particularly broken shells: it had been attached to some other body near the smaller extremity.

GRANULATA.

- Sabella granulata*. *Lin. Syst.* p. 1268.
Martini Conch. i. t. iv. f. 27. & 26?
Pallas Misc. Zool. t. 9. f. 3. & 2?
Pall. Cat. Dorset. p. 53.
Sabella tubiformis. *Br. Zool.* t. 92. f. 163.
Nereis conchilega. *Id.* No. 34.

Sabella

- Sabella Belgica.* Gmel. Syst. p. 3749.
 Turt. Lin. iv. p. 611.
- Amphitrite auricoma.* Gmel. Syst. p. 3111.
 Turt. Lin. iv. p. 82.
 Muller Zool. Dan. i. p.87. t.26. f.1.6.
- Terebella conchilega.* Turt. Lin. iv. p. 84.

S. composed of fine sand, agglutinated together into a thin, brittle tube, without any membranaceous internal coating. Length two inches or more: diameter at the larger end three-eighths of an inch, gradually tapering to half that size at the smaller end.

This is not uncommon upon many of our fine sandy shores.

Great confusion has arisen with respect to the synonyms of this *Sabella*: GME LIN has given it first under the article *Amphitrite*, quoting MARTINI, tab. 4. f. 26. 27. and afterwards as a *Sabella*, with reference only to the 27 fig. of that author.

Doctor TURTON has given it an additional place in the genus *Terebella*, with reference to the *Sabella tubiformis* of the *British Zoology*; and Mr. PENNANT has given the animal as *Nereis conchilega*.

The animal is certainly the *Amphitrite auricoma* as described by GME LIN, and is generally known by its two rigid, glossy, gold-coloured, bristly *tentacula*.

CHRYSDON.

Sabella Chryfodon. *Lin. Syst.* p. 1269?

Gmel. Syst. p. 3749?

Turt. Lin. iv. p. 610?

Martini Conch. i. t. 4. f. 29. 30.

Pallas Misc. Zool. t. 9. f. 14. 15. 16.

Baſter Opusc. Sub. i. t. 9. f. 4.

S. with a cylindric tube, of nearly the ſame ſize throughout, and about as large as a gooſe quill, compoſed of ſand, fragments of ſhells, or ſmall, flat pieces of ſtone, cloſely cemented together on a tubular membrane, which is ſmooth on the inſide: the upper part is furniſhed with numerous, long fibres, of the ſame texture, projecting in a ſub-funnel ſhape, but generally ſomewhat compreſſed ſideways.

Is ſometimes conſtructed wholly of ſand: others are formed of large fragments of ſlate, and not unfrequently mixed with whole ſhells, ſuch as *Nerita littoralis*.

Theſe are not uncommon in moſt of our inlets and bays, but rarely on the more expoſed ſhores: the largeſt we remember having ſeen, was in the inlet that runs up to *Kingsbridge* in *Devonſhire*, where it is very common a foot in length, and compoſed of very coarſe materials: but this is a circumſtance, entirely depending on the nature of the ſhore the animal inhabits, and which does not appear to be very choice of ſituation, like the animals of the two preceding, who can only inhabit ſuch places as will afford them fine ſand.

The

The *Chryfodon* is usually buried in a perpendicular direction; the funnel, or mouth of the case, is always about an inch above the surface, and is readily distinguished by its branched fibres: it is generally strait, except where larger stones intervene, in which case it is flexuous. Found most times congregated between high and low water-mark.

This, and the *Sabella conchilega*, have most probably been confounded; and, indeed, it is difficult to determine which of these is the *Chryfodon* of GMELIN.

It is sometimes wholly composed of broken shells, in which state, it may be mistaken for that species; but is never found creeping, or laterally attached.

The animal is a *Terebella* of a slender form, but considerably largest at the anterior end: joints about forty, with as many *fasciculi* and *branchiæ* on each side, the first nine or ten much larger, and nearer together than those on the middle of the body; round the mouth are numerous, long, filiform *tentacula*, like the body, of a pale flesh-colour; behind the head are short, branched feelers. Length sometimes four or five inches.



Sabella conchilega. Pult. Cat. Dorset. p. 54.

Terebella conchilega. Gmel. Syst. p. 3113.

Turt. Lin. iv. p. 84.

Sabella rudis. Br. Zool. No. 161. t. 26. lower figure.

A a a 2

S. with

5.

CONCHILEGA.

S. with a thin, fragile tube, composed of large fragments of shells, and little or no sand, cemented sparingly on a thin membrane, usually attached its whole length in a flexuous or serpentine form on old bivalves. Mr. PENNANT, and DOCTOR PULTENEY both mention this circumstance on the *Dorsetshire* coast: it is not, however, confined to that part, but is common throughout the western shores, and elsewhere.

Is rarely found on stones; and what is possibly a variety is sometimes seen creeping amongst the branches of *Sertularia abietina*: if this last is distinct, we dare not venture to give it as such, never having as yet had an opportunity of examining the animal.

The animal of *S. conchilega* is a *Terebella*, of a dull orange colour, with numerous, pellucid tubercles, and *branchiæ* on each side: *tentacula* round the mouth numerous, slender, filiform, and extremely long; retractile, but usually extended two or three inches, or more, and exceeds the length of the body; their colour is orange-yellow, prettily spotted with red; and when the animal is in vigour, they are in continual motion, thrown about in all directions: behind the head are short, branched feelers, of a deeper orange colour.

DOCTOR TURTON has erroneously made this animal the inhabitant of *Sabella tubiformis*.

We have seen this *Sabella* as large as a goose quill, complicated, entwined, and interwoven together; and not less than four or five inches in length. Is readily distinguished from *S. Chryfodon* by its habits, and by the want of the funnel-shaped, fibrous mouth; as well as by its component parts being more unconnectedly put together.

The animal, too, differs essentially from that of the other, especially in the more numerous joints of the body, which are not only swollen, or knotted, but the tubercles are remarkably prominent; and a much greater disproportion between the size of the anterior part, taking in ten or eleven joints, and the rest of the body; besides, the anterior part of this appears, through a lens, to be punctured or cancellated.



Sabella lumbricalis. Gmel. Syst. p. 3752?

Turt. Lin. iv. p. 613?

Fab. Faun. Groen. p. 374. No. 369?

Pult. Cat. Dorset. p. 53.

6.
LUMBRICALIS.

S. with a strong tube, composed of coarse sand, and sometimes mixed with fragments of shells, firmly cemented together in a rough manner, upon stones, shells, and other bodies, in a serpentine form, and frequently entwined with *Serpula triquetra* and *vermicularis*; to which it is very little inferior in strength, being by far the strongest of all the *Sabella* tribe. Length two or three inches; diameter one quarter of an inch. Common on all our shores.

The

The animal is a *Terebella*, with the proboscis a little spreading, and fringed round the margin with bristles: the mouth beset with four long *aculci*, and intermediate short ones: behind the ciliated margin of the proboscis is a scalloped ruff; and, on the back of the head, are numerous capillary *tentacula*, of a red colour, like the body, these are curled up when the animal is dead.

Discharges a beautiful purple dye.

We have followed Doctor PULTENEY in the prefixed references, though with doubt, as the tube is far from being fragile, and the animal appears to be destitute of the spines on the back; such at least never occurred to us, although the *fasciculi* and *branchiæ* are always conspicuous.

7.
CIRRATA.

Terebella cirrata. *Gmel. Syst.* p.3112.—*Turt. Lin.* iv. p.83.

S. with a thick, fragile tube, a little tapering, composed of sand, mixed with clay, slightly agglutinated together; soft when moist, and crumbly when dry. Length six or seven inches; diameter half an inch, or more; of the aperture a quarter.

This is gregarious, but not attached, standing upright in a muddy bottom, between high and low water-mark, with about an inch above the surface: is so extremely soft, that it is difficult to obtain more than two or three inches of the tube perfect.

We

We have never as yet observed this, but in one branch of the inlet that runs up to *Kingsbridge*. It is the tube of *Terebella cirrata*, and as it has not, we believe, been described as *English*, and possessing as much claim to a place in the *Sabella* genus as many others, could not be omitted.

The animal is furnished with two series of *tentacula* or feelers, those on the upper lip, or round the mouth, are extremely numerous, long, filiform, and of a pale colour; these usually contract into curls: the others, situated behind the head, are also numerous, short, stait, branched, and of a reddish flesh-colour: the body, when extended, is nearly a foot in length; the annulations, about ninety, furnished, as usual, with *fasciculi* and *branchiæ*; the tubercles very prominent, but the joints not tumid as in the animal of *S. conchilega*: colour pale, inclining to purplish-brown on the upper part near the head: when bruised discharges a red liquor.

When drawn from its case, it becomes considerably larger in the anterior part of the body, than the bore of the tube, but tapers greatly towards the tail.

This class of amorphous animals will, in all probability, ever remain in great obscurity; the great similitude of many, their variable forms, and different appearances in the living, and the dead states, especially when preserved in spirits, will always occasion great difficulty in discrimination.

The

The animals of *S. Chryfodon*, *conchilega*, and *cirrata*, approach each other so nearly, about the hind, or anterior part, that actual comparison is absolutely requisite to distinguish them; the bodies, however, somewhat differ; but the number of joints is not wholly to be depended on in some species: the cases or tubes, as well as the habits of the animals, are essential auxiliaries in this class of animated nature.

3.

ARENARIA.

S. with an extremely fragile, cylindric tube, composed of pure sand, slightly cemented together without any internal membrane, like *S. granulata*, but is never so large, and is equal in size at both ends.

This is very common on the *Dorsetshire* coast, especially at *Weymouth* and *Portland*; and are driven up in such abundance at *Studland*, that the beach is covered with them. These are usually from one to two inches in length, and about the size of a raven's quill; but are probably only fragments, or that part of the tube the animal forms above the sand, which is continually destroyed by every little increased agitation of the sea, and as frequently replaced.

The animal unknown.

9.

SUBCYLINDRICA

S. with a long, sub-cylindric, slender, fragile tube, composed of fine sand, and minute bits of broken shells, cement-

cemented together on a fine membrane, adhering by their flat sides.

This species is not uncommon in sand from *Salcomb* bar, above three inches in length, but more commonly broken into pieces of one or two inches; never more than one tenth of an inch in diameter, and nearly the same size throughout.

Animal unknown.



10.

S. with a long, slender tube, gradually tapering to the lower end to half the size of the upper part; composed of very fine fragments of shells, and minute flat bits of stones, agglutinated together at their edges, and standing oblique towards the larger end, lying on each other in an imbricated manner. Length three or four inches; size double that of a hog's bristle.

Taken up with sand from the bar off *Salcomb*, and some parts of the bay.

A variety is composed of fine sand, in which case the imbricated structure is not observable: some have a lateral branch near the smaller end; possibly another in a younger state attached.

Animal unknown.

B b b b

S. with

11.
CURTA.

S. with a small, short tube, composed of sand and minute bits of flat stones, agglutinated to a tough membrane; sometimes formed wholly of the finest sand, depending entirely on the soil it inhabits: the case is a little tapering to the lower end, by which it is fixed, and which is generally, for a quarter of an inch, destitute of any covering, but a flexible membrane, by which it adheres to the shingle under the surface, between high and low water-mark, and stands about a quarter of an inch above. Length scarce an inch; size of a crow quill.

This *Sabella* is gregarious, covering the whole surface of the shore in the inlet near *Kingsbridge*; appearing like bits of straw covered with mud, and as close and numerous as stubble in a field.

Animal a *Terebella*, small, of a pale yellowish-green colour; proboscis pointed, with a few upright, filiform, green *tentacula*, and numerous, slender, ciliated feelers, of a pale colour; these are much longer, and more slender than the others, and are in constant motion, but both are quickly protruded and contracted.

When the animal was immersed in spirits the *tentacula* instantly contracted, and were totally obscured. Being divested of its case, a radiated tuft was perceived on each side the head: the annulations of the body about sixteen, with as many *fasciculi*, and short peduncles on each side.

S. with

S. with a short, broad, and extremely flat tube, composed of large pieces, or fragments, of flat bivalve shells, chiefly of the *Pecten* genus; these are laid without order, but sometimes cover each other at the edges, and invariably placed with the concave side inwards, which leaves a narrow perforation.

The length of those we procured was about an inch and a half, formed of five or six fragments of shells on each side, finely agglutinated together; these pieces are in general three-eighths of an inch broad, and form a most singular structure. Inhabits the deep at *Torcross* in *Devonshire*.

The animal inhabitant has hitherto eluded our researches.

ADDENDA.

TO render this work as compleat as possible, it became necessary to give a few supplementary pages, in order that those species, which had been discovered since the printing of the *genera* to which they belong, might be described: this will also give an opportunity of noting any recent occurrence, or of adding any additional reference to such as are already described, especially those of the *British Shells*, which, being a periodical work, could only be referred to as the numbers came out.

The additions here given are systematically arranged, and where such shells have been before described, a reference to the page is added.

MULTIVALVE.

BALANUS.

STRIATUS.
p. 14.

This shell, though generally considered as a *Multi-valve*, and as such placed with the *Linnæan Lepas*, has certainly

certainly no claim to either ; but is more allied to the *parasitical Mytili*. It is always sessile, irregular in growth, bivalve, inequivalve ; lower, or fixed valve concave : upper valve, or *operculum*, smaller, flat : hinge indistinct, no apparent teeth.

With these characters, it should be removed from its present situation, and might, with propriety, be placed as a *Mytilus*, unless any thing in the hinge, hereafter observable in larger specimens, should be found to bring it nearer the genus *Spondylus*.

The animal is a *Triton*, with fourteen ciliated feelers, six on each side, and two erect.



LEPAS.



Lepas fascicularis. *Ellis. Zooph.* p. 197, t. 15. f. 6.

FASCICULARIS.

This species of *Lepas*, described and figured by ELLIS, is certainly very distinct from any before given ; and as it was from *St. George's Channel*, (meaning, we presume, the *Channel* between *England* and *Ireland*,) it must be considered as belonging to *British Testaceology*.

ELLIS describes it thus, "*Lepas fascicularis, testa quinquevalvi lævi corpus tegente, valvula dorsali basi dilatata, angulo acuto prominente, stipite nudo.*"

In

In size it is equal to *L. anatifera*, but differs considerably in the formation of its component parts or plates: the upper valves are pointed at the *apex*, and turn backwards, giving the front of the shell a convexity; whereas the other is rather concave: the dorsal valve spreads greatly at the base, and forms a considerably sharp, prominent angle, whereas in *anatifera*, this valve is regularly semi-circular.



PHOLAS.



DACTYLUS.
p. 20.

Pholas Dactylus. Don. Br. Zool. iv. t. 118.

This shell has four accessory valves; the one, not before described, is very small, and stands erect at the inner end of the two large plates to support them. The difficulty of obtaining them quite perfect, occasioned us to believe it had only three.



CRISPATUS.
p. 22

Solen crispus. Gmel. Syst. p. 3228.

GMELIN has mistaken LISTER'S shell, which is *Pholas crispatus*, and therefore has described this in both genera.



CANDIDUS.
p. 24.

Pholas candida. Don. Br. Shells. iv. t. 132.

Pholas

Pholas striata. *Don Br. Shells*. iv. t. 117.

STRIATUS.

Favan. t. 60. F. 2. 3. 6. 9.—*Gualt*. t. 105. F. p. 26.

This is by some called *Pholas lignorum*, or *Dutch wood-muscle*.



BIVALVE.



MYA.



Mya dubia. *Don Br. Shells*. iii. t. 108.

PHOLADIA.

p. 28.

Plentiful at *Torbay*, in fragments of lime stone, driven on shore by winter storms, but is not to be found in the rocks, which are ever uncovered by the lowest ebb tides; and of course is rarely obtained alive: in this state, however, we have procured it, and proved beyond doubt, that it cannot belong to the *Pholades*, as it is void of accessory valves.

The perforations in which these shells are concealed, are sometimes lined with a concreted, calcareous substance, closely connected with the rest of the stone, and equally hard, composed of several coats, or *laminæ*, of a different texture, not unfrequently half a line, or more, in thickness: the openings to these chambers are small,
and

and have somewhat the appearance of two holes broken into one, which is adapted to the shape of the tubes of the animal.

The inhabitant is an *Ascidia*, with two very long, slender, white tubes, exceeding the length of the shell; these are connected together their whole length, but terminated by two orifices, ciliated with fleshy fibres, of a dark purplish-brown: the body is also white; near the posterior end is a *foramen*, through which, a small foot, or *sustentaculum*, is sometimes protruded, and doubtless the apparatus, which assists in perforating rocks, being always placed in its cell with that end downwards, and incapable of turning,

It is probable this, as well as all other similar animals, whose habits are to perforate stone, are provided with an acid, or some solvent menstruum capable of performing that office: it must also be recollected, that this, seemingly laborious task, is not affected in any given time, but is the work of years; as the chamber for the lodgment of the animal, only requires enlarging as the shell grows.

Stone of a vitrifiable nature, is impenetrable to these animals, but all such as are wholly, or even partly calcareous, are more or less attacked;*

Mytilus

* This remark might be attended with considerable national advantage, if pursued with experimental application, under the direction and encouragement

Mytilus rugosus, *Donax Irus*, *Venus perforans*, and some others, are destroying the hardest lime stone; the *Pholades* are performing similar works, assigned by nature, on softer substances, such as chalk, indurated clay, and wood, which in like manner are perforated by some solvent power; not by the thin, fragile shells, that cover such animals, as some have erroneously asserted, and is too generally credited. All these become fixed in their cells for life, for as they enter in the most minute state, the excavations are conic, with the small end outwards, so that the shells are as it were become enclosed.

It is most probable, the young of these, and other perforating *Ascidia*, that drill the small round holes so frequently observed on shells; and not the *Trochi*, which are incapable of such works.

Don. Br. Shells. iii. t. 73.

MARGARITIFERA

Under the article *Pearl*, in the *Encyclopædia Britannica*, we find the following note:

R.A.
p. 23.

“There has been in these parts, (i. e. at *Perth*, in *Scotland*,) a very great fishery of *Pearl*, got out of the fresh-water *Muscles*. From the year 1761 to 1764, “10,000*l.* worth, were sent to *London*, and sold from

C c c c

“10*s.* to

of Government. A coating of pounded flint, or glass, laid on timber with a firm cement, would effectually preserve it from the calamitous ravages of the *Teredo navalis*, and other animals of similar habits.

“ 10s. to 1l. 16s. per ounce. We are told that a pearl
 “ had been taken there, that weighed 33 grains. But
 “ this fishery is at present exhausted, from the avarice of
 “ the undertakers: it once extended as far as *Loch-Tay*.”

These *Muscles* were doubtless the *Mya Margaritifera*, and it is probable many other rivers in *Great Britain* might afford at this time a sufficient quantity to repay the experiment. In many of the rivers of *Wales*, as well as in *Devonshire*, we have observed these shells in abundance; but whether they equally produce *pearls* we cannot determine; those, however, found in the former rivers are usually more rugged than what are observed in the latter; a circumstance more favourable to the production of *pearls*; and it is a known fact, that the old, rugged, decorticated shells, are only worth examining; the smooth ones rarely produce any, or so inferior in size, as to be of no value.

In Doct^r PULTENEY's view of the writings of LINNÆUS, page 42, it is said, that the *Swedish* naturalist made a remarkable discovery relating to the generation of *pearls*, in the river *pearl-muscle*, *Mya Margaritifera*. It appears, that five or six years are requisite, after the operation, to compel them to produce *pearls* the size of a vetch.

This extraordinary operation the Doct^r regrets we are unacquainted with, and which was considered of so
 .much

much importance, that the author was rewarded with a munificent premium from the states of the kingdom on that account.

It is, however, supposed, that perforations, or partial fractures in the shell, will occasion the production of *pearls*; for as these produce distortions, and ruggedness in the shells, it appears to have the same effect as on such as acquire it by age, and common accidents: but how these shells are opened without destroying the animal, and the *pearl* taken out, (which is said will be renewed again after a certain period) we do not pretend to determine.

Mya depressa. *Don. Br. Shells.* iii. t. 101.

Mya ovata. *Don. Br. Shells.* iv. t. 122.

OVALIS.

p. 34.

Although Mr. DONOVAN has given these two shells as distinct, he very justly expresses a doubt. That they are only varieties we cannot hesitate to determine; and we have already gone further, by giving them as ponderous varieties of our *Mya Ovalis*. DONOVAN observes, both these shells inhabit the *New River*, near *London*, and the *Froome* in *Somersetshire*. We have found them in the *Avon*, many miles above and below its conflux with the *Froome*: at *Bath* they are thrown up in great abundance after floods, and commonly used for putting colours in.

That it is difficult to discover specific characters of distinction in some of the productions of nature, all naturalists will allow; and when no permanent distinguishing marks appear, we can only refer to habits: in following this course there seems nothing to divide these two shells from each other, nor from that which we have described as the *ovalis*: all the gradations that join them are commonly found in the same waters. That the soil and nature of the water have considerable effect upon shells, there can be no doubt, particularly in strength, and colour; for instance, these subjects, which are figured in the *British Shells*, with elegant yellow *raddii*, are rarely found in the *Avon* with such markings; and instead of the ground colour being green, are usually of a dark olive-brown, and frequently dusky.

The animals of these fresh-water *Myæ*, are certainly not *Ascidia*, but are similar to those inhabiting the river *Mytili*.



SOLENACEÆ.

p. 39.

This shell, which is so similar in shape to the *Cardium corneum*, is essentially different in the animal inhabitant, which appears to be a *Tethys*, of a very pale colour, with one long tube, not internally divided, but furnished with only one opening: and about the middle of the shell in front, is a retractile, slender foot, half as long as the *syphon*, capable of adhering to the smoothest surface, and will ascend the sides of a glass filled with sea-water. The animal of *C. corneum* is similar to that of *C. lacustre*.

SOLEN.

SOLENS.

Solen marginatus. *Don. Br. Shells.* iv. t. 110.

VAGINA.
p. 48.

This, which has generally been considered as a rare PELLUCIDUS species, we have found plentiful at *Torcross*, by dredging. p. 49.

Solen antiquatus. *Don. Br. Shells.* iv. t. 114.

ANTIQUATUS.
p. 52.

Have since seen specimens in the cabinet of Mr. BRY-FRAGILIS, ER, taken on the shore near *Weymouth*. p. 51.

S. with an extremely flat, pellucid, thin, white shell, SQUAMOSUS, of a sub-orbicular shape; most minutely, and elegantly punctured all over, appearing under a common pocket lens, like fine shagreen; besides which, there are a few obscure, concentric wrinkles, most conspicuous round the margin: *umbo* very small, pointed, central, and not turning to either side. Inside smooth, glossy white, with obscure striæ radiating from the hinge; margin plain, and rather more opaque than the rest of the shell: teeth two, double, diverging on each side the *umbo*; these are thin, but stand erect, considerably above the commissure; a depression, or furrow, on the margin, divides each tooth into two *laminæ* almost to the beak, where they are united and form an acute angle.

One

One valve of this curious shell has as yet only come under inspection; we found it in sand from *Salcomb* bay: it was recent, and as clear and pellucid as the *Bulla aperta*; being very flat, has the appearance of a scale of a fish. Length three-eighths of an inch; breadth half an inch.

The hinge does not appear to strictly belong to any of the *Linnæan genera*, but seems to be most nearly allied to the *Solen*, which has induced us to give it a place as such, for the present.



PINNA.

Tab. 15. f. 3.

S. with a thin, pellucid, fragile, depressed, white shell, of a sub-oval shape, strongly wrinkled concentrically: *umbo* small, placed very near the smaller end, from whence the connecting cartilage runs in a straight line on the longest side, and joins the valves nearly the whole width of the shell, like a *Pinna*; the short end declines a little from the beak; the margin opposite the hinge is semi-circular, and extremely thin and brittle; the valves are dissimilar, the upper is a little convex, the lower slightly concave.

Inside white, somewhat pearly: a blunt tooth in each valve running straight from the beak; that in the concave valve is largest, and uneven on its surface; these are not inserted, but stand by the side of each other when the valves are closed.

Length

Length from hinge to the opposite margin above three-eighths of an inch ; breadth three-quarters.

This curious, nondescript species, we took alive, by dredging at *Torcrofs*.



TELLINA.




Tellina inæquifriata. *Don. Br. Shells*. iv. t. 123.

LETA.
p. 37.



Tellina rigida. *Don. Br. Shells*. iii. t. 103.

CRASSA.
p. 65.

Venus borealis. *Don. Br. Shells*. iv. t. 103.

RADULA.
p. 68

We cannot agree with Mr. DONOVAN in considering this shell the *Venus borealis* of GMELIN: it is perhaps difficult to determine the true *Linnæan* shell, under that denomination.

GMELIN is by no means correct in his synonyms, having referred to no less than three very different species for it; that of GUALTIERI, quoted tab. 75. fig. 5. is probably intended for fig. S. as there is no fig. 5. in the plate: those in LISTER'S *Conchology*, and *Anim. Angliæ*, are our *Mastra compressa*, the *Venus borealis* of PEN-

WANT:

NANT: that referred to in CHEMNITZ, may possibly be the true *borealis*, but that author also unfortunately quotes LISTER, and GUALTIERI the same; none of which are the least like this shell.



CARDIUM.



ECHINATUM.
p. 78.

Cardium echinatum. *Don. Br. Shells.* iii. t. 107. f. 1.

TUBERCULATUM.

Cardium tuberculatum. *Don. Br. Shells.* iii. t. 107. f. 2.

The shell figured by this author, is a very good representation of that ponderous *Cardium*, we made mention of under the article of *Cardium echinatum*. It probably is the *Gmelinian tuberculatum*, and possibly a distinct species.

We have noticed this strong and thick shell, destitute of spines, on the shore of *Dawlish warren* at the mouth of the *Ex* in *Devonshire*, where at times it is plentiful; and have remarked, that on other parts of the same coast where we have taken the *echinatum*, and *aculeatum*, not one of these strong shells were to be found; a circumstance that favours an opinion of its being distinct.

It probably inhabits the deep, as we have never yet obtained it alive.

Cardium

Cardium edule. Don. Br. Shells. iv. t. 124. f. 1. 1.

EDULE.
p. 76.



Cardium rusticum. Don. Br. Shells. iv. t. 124. f. 2.

RUSTICUM.

This is another of this very intricate class that seems to have puzzled the conchologist. It is said to grow to a larger size, and to possess fewer ribs than the *edule*, and those more elevated; but whether it is really distinct from that shell, certainly admits of doubt.

We lately received from a testaceological friend, Mr. SWAINSON, what he considers as the *rusticum*, observing, that such were known by the name of *Rosscockle*, and were sold for three pence per dozen, on the *Essex* coast, when half a peck of the common sort sold only for one penny: such are taken only on one particular sand off *Leigh*, after strong gales of wind.

This shell very well accords with that figured by DONOVAN, and is not unlike that given by CHEMNITZ, which GMELIN quotes. If it is really distinct from *edule*, we fear no permanent character will be found, by which it may be distinguished from the latter, as the number of ribs vary. That the smaller *cockles* are usually destitute of the rufous colour, and are more sub-orbicular, must be admitted; the ribs are also finer; but are not these marks the effect of immaturity?

If the larger sort is distinct, it appears equally plentiful with the other, for we have observed in many places, this is the sort principally eaten, the smaller ones being rejected as young, and left to grow larger; and we must confess, that the great variety now before us, run so much into each other, as to render it impossible to divide them, although the two extremes appear different.

LACUSTRE.
p. 89.

The animal of this shell, as well as its congenera *cornutum* and *annicum*, is certainly an *Ascidia*, not a *Tethys* as was stated by mistake.

MACTRA.

SUBTRUNCATA.
p. 93.

Maetra subtruncata. *Don. Br. Shells*. iv. t. 126.

STULTORUM.
p. 94.

Maetra stultorum. *Don. Br. Shells*. iii. t. 106.

COMPRESSA.
p. 96.

Tellina plana. *Don. Br. Shells*. ii. t. 64.

By mistake we have referred to this shell of DONOVAN, under the title of *Tellina borealis*, instead of *plana*.

Maetra

Maetra glauca. *Gmel. Syst.* p. 3260. 20.

GLAUCA.

Chem. Conch. vi. t. 23. f. 232. 233.

Born. Mus. t. 3. f. 11. 12.

Don. Br. Shells. iv. t. 125.

M. with an oval shell, of a dirty-white colour, very finely striated transversely, and marked with broad and narrow glaucous rays: the anterior end wrinkled: the the beaks reflect backwards, with a narrow gape between them. Length usually two inches and a half; breadth three and a half.

On the authority of Mr. DONOVAN this is added to the *Fauna of British Shells*; who informs us, it was discovered by Miss POCOCK in 1801, on *Hale sands*, under *Lelant in Cornwall*. It is probable these extensive sands may be very productive at times, but we must consider this lady as extremely fortunate; for in our visits to that part of the *Cornish coast*, especially lately at the place mentioned, and about *St. Ives*, no such shell was to be found, although *Venus Chione* was plentiful, and which was brought to us by the fishermen for *M. glauca*, not knowing the difference: this may account for their saying this shell is at times found on that coast in plenty.

The very good figure given in the *British Shells*, is considerably larger than is usually described, measuring three inches and a half, by four and a half.

TENUIS

M. with a compressed, sub-triangular, equilateral, semi-pellucid, thin, white shell, concentrically wrinkled: *umbo* small, central, much produced, and not turning to either side.

Inside moderately smooth and glossy, with a broad, but nearly obsolete, conic *cicatrix*, running to a point across the middle of the shell, towards the beak: hinge furnished with a bifurcated tooth, and a narrow *foviola*; and remote, lateral, laminated teeth, one on each side in one valve; in the other a plain single tooth, with a corresponding cartilage cavity, but no lateral *laminæ*. Length a quarter of an inch; breadth rather more.

We first discovered this species at *Southampton*, where it is not uncommon on the shore to the west of the town: and have since received it from Mr. BRYER of *Weymouth*.

The hinge is somewhat similar to that of *M. compressa*. but the *foviola* is not so broad, and is at once distinguished by the lateral teeth, which that shell is destitute of: it differs also in shape, being much more angulated, and produced at the beak, as well as the *cicatricula*.

In comparing it with the young of *Maetra solida* and *Stultorum*, it differs from them, not only in shape, but essentially in the central, or primary teeth, and in possessing lateral ones only in one valve, which both valves of those shells are furnished with.

The

DONAX.

The animal inhabitant of this shell is an *Ascidia*, and IRUS.
 not a *Tethys*; which is probably the case with most such p. 100.
 whose nature it is to perforate other bodies: it has two
 slender, pellucid, white tubes, spotted with opaque
 white; these are not half so long as the shell, and joined
 together, except near the end, where they diverge, and
 become of a pink colour, the openings ciliated with
 feathered fibres of the same: in some the points and
 fringe are of the same colour as the rest of the tubes.



D. with a strong, glossy, chestnut-coloured shell, fur- CASTANEA
 nished with a few irregular, transverse, antiquated ridges,
 or wrinkles; one single ray of the same colour, but
 darker, runs from the beak to the opposite margin, in a
 curved direction, and divides each valve nearly in equal
 parts; from this to the posterior end the colour becomes
 pale: *umbo* obtuse, rather inclining to the anterior, or
 longest side. Inside of the same colour, smooth and glos-
 sy, with a small trace of the ray at the margin: hinge
 very strong; teeth, one very large, and one small, in
 each valve; no lateral teeth: *cicatrix* broad, running
 from the anterior side one third across the shell, in a
 transverse direction, from which continues a marginal
 line almost to the opposite side: margin plain. Length
 a quarter of an inch; breadth three-eighths.

This

This appears to be a nondescript species, at least we have not been able to find any thing like it described : it comes nearest to *Donax plebeia* in shape, being sub-cuneiform, and the teeth are equally strong in proportion; in these, however, it differs, especially in their obliquity, being the reverse of each other; that shell, too, has a lateral tooth, and the beak turns towards the posterior or short side; whereas, in this, if any thing, it is inclined to the longer or anterior side.

It appears to be a rare species, as only one mutilated specimen of a single valve, had come under examination till very lately, which was taken at *Falmouth* in *Cornwall*, five or six years ago; from which we did not choose to hazard a description: a few other specimens, recently found at *St. Austle's* bay in that county, and on the coast of *Devon*, has enabled us to add it to the catalogue of *British Shells*. They are all exactly alike in colour and markings.



VENUS.



UNDATA.
p. 117.

Venus undata. *Don. Br. Shells.* iv. t. 121.



CANCELLATA.

Venus cancellata. *Don Br. Shells.* iv. t. 115.

This may possibly be *V. cancellata* of GMELIN p. 3270.
but

but be that as it may, it is without doubt the young of *Venus verrucosa*: in that state it is not only much less convex, but the transverse ridges are much thinner, destitute of the warty appearance, or very imperfectly so at the anterior end, and faintly striated longitudinally in the furrows, which gives it a cancellated appearance towards the beak, where the transverse ridges are not much elevated.

When these shells attain the length of an inch and a quarter, or thereabouts, they lose the longitudinal striæ, and the ridges become strongly verrucose; they are, however, in most of the full grown specimens, to be traced about the *umbo*.

CHEMNITZ has figured the young *V. verrucosa* vol. vi. tab. 29. fig. 304. 305. and refers to the *V. cancellata* of LINNÆUS: and in the same tab. fig. 306. 307. is another which he gives as a variety; this is much broader in proportion to its length, than what the *verrucosa* is usually found to be. These figures GMELIN quotes for his *V. cancellata*; so that by collating these references with the figures in question, and comparing the various and numerous specimens, now before us, of the *verrucosa*, from the size of a pea upwards, we have very little doubt but in its younger state it has been described as a distinct species, under the title *cancellata*; and that these are actually one and the same shell, in different periods of growth. It must also be remarked, that the *verrucosa*

is subject to other varieties, from having its ridges partly worn down; in this state the warty appearance is lost even in the largest shells, the ridges become smooth, not reflected, and destitute of longitudinal striæ: in young shells, when the ridges are partly worn, the longitudinal striæ become more conspicuous. These varieties have been the cause of much perplexity, but an opportunity of examining on the western coasts some hundreds of these shells in all stages, may be allowed to warrant such an opinion.

VIRGINEA.
p. 128.

The figure in the *Br. Zool.* tab. 55, without number, is probably intended for the description of *Venus rhomboides* of that work, as the number of that shell is 55, and there is no other figure with that number. The reference to Mr. PENNANT should therefore stand thus for our *virginea*. *Ven. rhomboides*, *Br. Zool.* No. 55. tab. 55. figure without number.

AUREA.
p. 129.

Having quoted *Venus rhomboides* of *Br. Zool.* for this shell by mistake, we beg it may be removed to *Venus virginea*, and coupled with the figure there referred to: and in its stead the *Tellina rugosa* of PENNANT to be placed as the *V. aurea*, the reference to which, will stand thus: *Tellina rugosa*, No. 34. tab. 57. fig. 34.

V. with

V. with a strong, sub-triangular, yellowish-white shell, SPINIFERA with a few antiquated, concentric ridges, in other respects smooth: *umbo* central, remarkably prominent, and turned a little to one side; each side sloping nearly equal, and forming the umbonal regions into an acute angle; under the beak a lanceolate, cordiform depression. Inside smooth; hinge very strong in proportion, furnished in one valve with two strong teeth, one running backwards parallel with the cartilage slope, bifid, or divided longitudinally; the other is triangular; and near it, running parallel with the cordiform depression, is a strong, lateral *lamina*, of a semi-lunar shape, the convexity inwards; and a deep groove between that and the margin: the other valve is possessed of three teeth, two of which greatly diverge, in order to admit the triangular tooth of the opposite valve between them; and a lateral tooth, which locks in between that and the marginal edge; the margins are plain. Length half an inch; breadth nearly the same.

This extremely rare shell, was found on the coast of *Devonshire*.



V. with a sub-oval, sub-triangular, yellowish-white SPINIFERA shell, wrought with numerous, fine, concentric, parallel, equidistant, elevated, and somewhat reflected ridges, about thirty six in number: these ridges at the anterior
 E e e side,

side,* on the margin of the cartilage slope, on both valves, become confluent in pairs, and form short, obtuse spines, reflecting backwards; this double row of spines forms a deep cavity for the cartilage: *umbo* small, nearly central, and turned a little to one side, beneath which, is a strong, lanceolate, cordiform depression. Inside smooth, white; hinge furnished with a single primary tooth, and a small cavity on each side in one valve, which locks in between, and reciprocally receives two in the other valve; the former has also a remote, lateral *lamina* on each side, which the latter is destitute of, or very obsolete: the margins are plain. Length half an inch; breadth rather more.

This new, and interesting species, has somewhat the habit of that rare, and valuable shell *Venus Dione*; and, indeed, is not unlike the figure of it given by LISTER, but the spines are neither so conspicuous, nor placed so remote from the end; this shell, too, wants the inner row of spines on each side, observable in the other, and also differs somewhat in the hinge.

In shape, it much resembles *Venus striatula*, but rather longer in proportion to its breadth; the concentric ridges are, however, finer; and more resemble those on the young *Tellina Radula*.

We

* This is usually termed the anterior end, but certainly is more properly the posterior, for the tube, or part from which the animal receives sustenance, is protruded at the other end; and in all bivalve shells, is uppermost in their native sand.

We found a perfect shell of this curious species, in a heap of sand, that was brought from *Salcomb* bay; and a single valve, larger than the above described.



CHAMA.



Chama cor. *Don. Br. Shells.* iv. t. 134.

COR.
p. 134.



PECTEN.



Ostrea lineata. *Don. Br. Shells.* iv. t. 116.

LINEATUS.
p. 147.

There are several beautiful, and singular varieties of this species; some are dull yellow, others purplish-brown or chestnut, with one or both valves mottled, and sometimes streaked with white, or yellowish; and though apparently smooth, when examined by a lens, are found to be very finely shagreened. One specimen in our cabinet, has the margin, for the breadth of one tenth of an inch, very conspicuously ribbed or rayed, the rest of the shell more strongly shagreened than usual; the rayed part divided from the other, by a very regular concentric line; the rays about fifty in number: the inside edge finely crenated.

E e e e 2

This

This was taken at *Plymouth* by the trawl net, and is rather larger than that before described.



OSTREA.



STRIATA.
p. 153.

In making this shell of LISTER an *oyster*, we had followed our precursors, but not without doubt; for though we had never seen the flat, or what had been termed the upper valve, there always appeared sufficient character in the hinge of the convex valve, to have placed it with the *Anomiæ*, had not LISTER, DA COSTA, and others, spoken of it as an *Oyster*, with so much confidence. It is, however, beyond dispute, an *Anomia*, and we think, there is so little doubt with respect to the *A. undulata* being only the young of it, that the *synonyma* of these two shells, should be brought together under the title of the latter.

It is now easily accountable, why so many concave, or, as was termed, the under valves, were found in proportion to the upper or flat valve; for, as DA COSTA says, there are hundreds of the former found to one of the latter. The fact is, that the striated, or concave valve, is the upper, and the flat, or perforated valve adheres so firmly to the rocks, as not often to be separated with the other; and therefore the perfect shell is never met with but alive, adhering to other substances:
indeed,

indeed, this valve would not be discriminated from that of *A. Ephippium*, if found detached from the other, being always destitute of striæ. It is evident, therefore, those who have described the flat valve, must have mistaken for it, the flattest of the concave valves that have been somewhat worn, as DA COSTA expresses it, "the outside work is generally more obsolete." We have recently taken alive, a few larger and stronger specimens, on the south coast of *Devon*, adhering to old bivalves, (about an inch and a quarter in diameter,) which confirms our opinion.

All the *Anomiæ* are subject to such variation in growth, that it is impossible to fix permanent specific characters to many of them, and we suspect the exotic species are multiplied beyond their natural limits.

When we gave the *A. Squamula* as distinct, it was more from popular opinion, all of which seems to have flowed from LINNÆUS; we must, however, acknowledge, that if the *Squamula* is continued as distinct, we shall in all probability never find the young of the *Ephippium*; if, therefore, the synonyms of *Squamula* as well as *Cepa*, were conjoined to those of *Ephippium*, no violence would be offered to nature, for there really are no distinguishable characters.



MYTILUS.



Mytilus edulis. *Don. Br. Shells*. iv. t. 128. f. 1. 1.

EDULIS.

Mytilus p. 159.

UNGULINUS.

Mytilus unguinus. *Don. Br. Shells.* iv. t. 128. f. 2. 2.

Gmel. Syst. p. 3354. 12.

Chem. Conch. viii. t. 84. f. 747.

Id. t. 85. f. 756.

On the authority of Mr. DONOVAN, this is given as a *British* species; who says, "several shells of this kind "were picked up by Miss POCOCK, on the coast of "Cornwall."

It very much resembles *M. edulis*, but is generally allowed to be more pointed, and curved at the beak; beneath which it swells, or projects more at the posterior margin: according to different authors, the hinge seems to be furnished with from two to six teeth at the tip, and the groove with numerous *crenulæ*: valves very convex, of a greenish, or blueish-black colour. Length four or five inches; breadth from two, to two and a half.

Inhabits *New Zealand, Cape of Good Hope, and Mediterranean.*

Much caution is requisite, in determining the species of this genus, so similar to each other, and subject to so much individual variation by climate, and other circumstances: which have already, we fear, been the occasion of multiplying the species beyond their natural bounds.

Mytilus anatinus. *Don. Br. Shells.* iv. t. 113.

PINNA.

PINNA.

This species, is doubtless the same as Mr. PEN-INGENS. NANT noticed in the cabinet of Doctor WALKER of p. 180. *Moffat*; we are informed by the author of the *Elements of Natural History*, vol. 2. p. 381. that a very large species was found by Doctor WALKER, off the island of *Barra*, in 1764; called by him *Pinna borealis*.

UNIVALVE.

BULLA.

Bulla aperta. *Vignette* 2. f. 1.—animal, f. 2.—its gizzard, APERTA.
f. 3. 4. p. 208.
Don. Br. Shells. iv. t. 120. f. 1.

Bulla Halictoides. *Vignette* 2. f. 6. enclosed by the animal. HALICTOIDEA,
p. 211.

Bulla plumula. *Vignette* 2. f. 5. enclosed by the animal. PLUMULA.
p. 214.

Bulla

HYDATIS.
p. 217.

Bulla Hydatis. *Vignette* 1. f. 1. 2.—animal's gizzard, 3. 4. 5.



CYLINDRACEA.
p. 221.

Bulla cylindrica. *Don. Br. Shells*. iv. t. 120. f. 2.

It is unfortunate, that this shell, which was properly first named by Mr. PENNANT, and we believe has hitherto only been noticed as *British*, should have been so confounded; especially, as the figure given in the *British Zoology* is very expressive.

DA COSTA first led to these errors, by making it the *Voluta pallida* of LINNÆUS, not knowing the shell. DONOVAN, following DA COSTA, fell into the same error; but afterwards corrected his mistake, by figuring the true *cylindracea* of PENNANT, and by acknowledging, that it more clearly corresponds with that shell than the *V. pallida*: unfortunately, however, this author has referred to *Bulla cylindrica* of GMELIN, a species totally different, and not the least allied to it, if we may judge from the figure referred to by that author, in FAVANNE, CHEMNITZ, and GUALTIERI: nor does he quote the *British Zoology*.

Doctor PULTENEY was not aware, or rather, did not recollect, that the name of *cylindrica* was preoccupied for a very different species of *Bulla*, or certainly he would not have recorded it by that name, and thereby have continued perplexity; but he seems to have been induced to do so, from its being so called in the *Museum*:

Port-

Portlandicum. As, however, Mr. PENNANT was the original author of the name given to the shell in question, and whom Doctor PULTENEY quotes, and not the *cylindrica* of GMELIN, it could be wished he had adopted the name of the former, and not of the latter.

LISTER probably was the first who figured *B. cylindracea*, Tab. 714. fig. 70. and has marked it with an A. denoting it as *English*; at the same time adding (*Barnstable*,) the place from whence he obtained it. With two figures of this shell is also placed *Voluta pallida*, without any number, or mark to denote distinction; and over them are these words, "*exigua, alba, vere cylindracea*:" this circumstance has, amongst other things, served to confound these shells.



BUCCINUM.



Buccinum undatum. *Don. Br. Shells.* iii. t. 104.

UNDATUM.
p. 237.



We have been lately favoured with a variety of this AMBIGUUM, shell from Mr. RACKET, much thinner, and with a greater number of ribs, (fifteen instead of eleven) and those regularly and finely striated transversely, without rising into tubercles.

Ffff

MUREX.

MUREX.

GRACILIS.
p. 267.

At the time we described this shell, one specimen only had occurred, and that somewhat worn. We have now the satisfaction to say that, Mr. BRYER has since favored us with a live specimen, taken with two or three others, by dredging in the west bay of *Portland*. This is larger, exceeding an inch in length, with thirteen ribs: the whole shell of a yellowish brown, except between the junction of the spires, which is purplish-brown, and a white band round the middle of the body whirl, beginning at the upper angle of the aperture, and terminating about the middle of the outer lip; the same mark appears in the other, but almost obsolete: the exterior lip is sharp at the edge, thickened at the back by a rib, and sub-crenated within. This extremely rare *Murex*, is one of the most beautiful of the *British* species.

TROCHUS.

TENUIS.
p. 275.

Trochus papillofus. *Don. Br. Shells*. iv. t. 127.

TURBO.

IMBECILLUS.

T. with a sub-oval, ventricose shell, with four spirally ridged volutions; the first very large, occupying three-fourth

fourths of the shell: *apex* not much elevated, but moderately pointed: aperture sub-orbicular; outer lip thin, sub-crenated by the ridges; pillar lip broad and smooth, imperforated.

Diameter about three-eighths of an inch, usually as broad as it is high.

We received a shell of this description from a conchological friend, for the *T. obtusatus* of LINNÆUS; it was of a dull orange-yellow colour, and was taken on the coast of *Dorset*.

Mr. GIBBS, who has recently taken at our desire, a tour of research on the coast of *Cornwall*, brought several of these shells from the rocks at low water-mark, near *St. Ives*.

These agree in every respect with that from *Dorsetshire*, except in colour; some are dark-purple, with the ridges white; others greenish on the outside, the inside dark purplish-brown, or chocolate-colour: on the body are ten or eleven, much elevated, sharp ridges, reflecting a little upwards; on the second volution are three or four, and sometimes the same on the third, but more commonly worn smooth.

Amongst the variety of littoral shells that have puzzled the most able testaceologists, and which in the com-

mon *ferriswinkle*, *T. littoreus*, and *T. rudis*, differ so much at various periods of growth, that it is no easy matter to identify them; this seems to be the most distant, without the gradations which might bring it to any of its congeners; but is certainly not *T. obtusatus*, which is described to be smooth, roundish, and very obtuse; a shell we have before, under the article *Turbo littoreus*, doubted if not a variety. We must, however, confess that, although we have in part fallen into the opinion of scientific friends, in giving this a distinct place, yet we are not without suspicion, that the intermediate links may be found on some parts of our coasts, that would connect this with *T. littoreus*, as the varieties of that shell in its infant state are infinite.



HELIX.



OCTANFRACTA
p. 396.

In the former part of this work, we referred this shell to *H. octona* of the *British Zoology*, but with doubt: we are indeed almost inclined to think, the figure of a mutilated specimen given in that work, must be referred to the *Linnæan octona*, which the author has quoted, and in which he had probably been deceived, as to its being *English*, as others have.

Mr. PENNANT'S description unfortunately conveys little or nothing, and a mutilated figure not much more;
fo

so that we must ever remain in the dark with respect to his intentions; indeed, he seems to have been quite unacquainted with any thing relative to the history of the shell, as a native of this county, and therefore our doubts will the more readily be pardoned.

This author has referred to a minute shell in GUALTIERI, tab. 6. fig. B. for his shell; the *Buccinum terrestre* of this work, a species not in the least like what is considered in general by collectors as the *H. octona* of LINNÆUS; and yet GMELIN has fallen into the same error, by quoting the same figure in GUALTIERI, though he does not notice PENNANT'S shell.

Doct^r TURTON, of course, has followed GMELIN'S errors, and has added a reference to PENNANT'S shell; though he has omitted the *Buccinum Acicula* of MULLER, which the other has as erroneously quoted.

The *H. octanfracta* is, as we have before asserted, perfectly distinct from these shells, except that of the *Br. Zoology*, and possibly may be entirely new, as hitherto we believe it has only been found in one place, and that in *Cornwall*, as remarked in the former history of it.

If it really is a new species, the merit of its discovery rests with Mr. GIBBS, whose industrious exertions for collecting, and excellent discrimination, especially of the more minute species, have tended to enrich these sheets.

In

In a recent visit to the neighbourhood where this shell was discovered in the year 1798, strict search was made, with a view to ascertain if it had spread; but although a great many were observed of all ages, in the same muddy pool, on the side of the high road, upon the top of a hill; not one could be found in similar situations, either contiguous, or in any other parts of the country. From these we renewed our *cochlearium*, the first colony having failed, probably from the different nature of the waters.

ASPERSA.
p. 407.

Helix hortensis. Don. *Br. Shells*. iv. t. 131.

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VIGNETTE I.

- 1 Bulla hydatis, natural size, p. 217.
- 2 Ditto, with the anterior part of the animal, and lateral fin-like membranes protruded.
- 3 The gizzard or stomach of the animal. Natural size.

4 Ditto, as it appears when first extracted from the animal, magnified; shewing the tips of the plates A. A. A. covered by a thin membrane, and surrounding muscular integument, thickened at the upper part B.

C The part attached to the mouth, with the Oesophagus, or gullet, communicating with the gizzard.

D. The intestinal, or alimentary canal.

5 The gizzard laid open at its anterior end, shewing the three corrugated, corneous plates, E. E. E. with their connecting ligaments F. magnified.

6 A plate of ditto of its natural size.

7 Helix cristata, natural size, p. 460.

8 Ditto, with the anterior part of its animal protruded, as in the act of crawling, magnified

VIGNETTE II.

1 Bulla aperta, natural size, p. 208.

2 Animal of ditto, with the shell concealed under the posterior shield A

3 The gizzard, of its natural size, composed of three testaceous plates, shewing the smaller plate B. with the connecting ligament C.

4 Another view of the gizzard, shewing the two larger plates D. D. with their connecting ligament.

E. The gullet. F. The alimentary canal.

5 Animal of *Bulla plumula*, p. 214.

G. Its protruded foramen. H. H. the lower lamina, or border of the sustentaculum.

I. The upper lamina, under the middle of which the shell is concealed. K. A plumose feeler. L. the tentacula, at the base of which the eyes are placed.

6 Animal of *Bulla haliotoidea*, p. 211.

M. The membranaceous shield, under which the shell is concealed. N. a finus, through which an appendage, or arm, is sometimes protruded. O. The tentacula, at the base of which the eyes are placed.









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