CHAP. IV.

Of Celliferous Corallines.

BY Celliferous Corallines, I mean those small plant-like marine Bodies, which adhere to Shells, *Fucus*'s, &c. of a brittle, crustaceous, and transparent Substance; and which appear, when magnified, to be fine thin Cells, the Habitations of small Animals connected together, and disposed in Variety of elegant Forms like Branches. All this kind effervesce with Acids.

N°. 1. *Corallina cellifera, erecta, ramosissima, tenerrima, & plumosa.* Plate XVIII. Fig. *a. A.*

Corallina pumila erecta ramosior. R. S. p. 37. N°. 20. Soft-feathered Coralline.

The Appearance of this Coralline in its first or beginning State, is so unlike itself in the latter or more perfect State, that one would be apt, at first View, to take it for a different Species.

The lower Part of N. 1. Plate XVIII. at Fig. *a*, where it appears bare, without the feathered Branches, the Cells not being opened, is this first State. In this Condition we find it, in the *Hortus Siccus* of Mr. *Buddle*, in the Collection of the late Sir *Hans Sloane*, by the Name of, *Fucus minimus, hirsutus fibrillis herbaceis similis.* D. Doody. R. S. 330.

But when it is in its perfect State, these tubulous Stalks rise into beautiful plant-like Figures, with feathered Branches,

 which

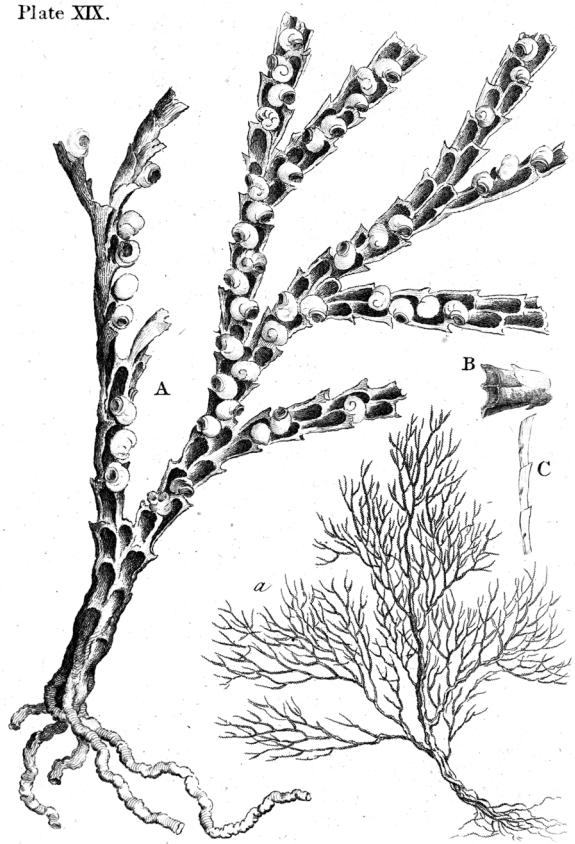
which are elegantly diſpoſed one above another, as in the upper Part of the ſame Figure, N°. 1. at *a.*' When we examine it by the Microſcope, we find that each Branch is ſubdivided in a twofold or dichotomous manner; and each Diviſion of a Branch compoſed of two Rows of Cells of a ſemi-cylindrical Form, articulated together, and placed alternately Side by Side, their Faces or Openings looking one Way: Each Cell has a ſharp Point on the Top, ſtanding outward; and a black Spot in the Middle. Upon other Specimens I obſerved ſmall teſtaceous Figures on the upper Part of each Cell.

Fig. *A*, ſhews the magnified Appearance of the ſmall Tubes, paſſing into the unopened Cells which form the Stalk; from this ariſe the dichotomous Branches, with the Cells open, and black Spots in them. *B*, ſhews the teſtaceous Spherules on the Top of each Cell. At *C*, is a croſs Section of a Branch, to ſhew the hollow Inſide of the Cells. *D*, ſhews the upright Section of 3 Cells, with the Situation of the black Spots.

Theſe black Spots are nothing but the dead Polypes, or Remains of the Animals, once inhabiting theſe Cells. Of which I had evident Proof in my laſt Journey to the Sea-coaſt. For after I had examined this Coralline, with its Polypes alive in Sea-water (See *E*, Plate XVIII). I laid this Specimen aſide; and, upon examining it again ſome time after, I found the lifeleſs contracted Animals exhibited the Appearance above-mentioned.

Theſe Polypes turning into teſtaceous Bodies, opened a new Scene of Wonder to me. But the Minuteneſs of theſe ſhelly Figures would have been paſſed over, without any further Notice, if it had not been for a Preſent I received from my

Plate XIX.



my worthy and ingenious Friend Mr. *Peter Collinſon*, F. R. S. of a Specimen of this Claſs of Corallines, which he had ſent him from *America*. Examining this carefully with the Microſcope, I plainly diſcovered it to be the connected *Nidus's*, or *Matrix's* of certain teſtaceous Animals, like ſmall Snails or *Neritæ*; an Account of which I have had the Honour to lay before the Royal Society, in *March* 1753. Plate XIX. Fig. *a. A.*

That theſe little Snails are perfect Animals, no-body will doubt, who has thoroughly examined them; and that the ultimate End of this curious branched Coralline, was made ſubſervient to the Purpoſe of introducing theſe little Creatures into Life: But ſuppoſe it is aſked, How do theſe go on to produce their Kind? This indeed will be difficult to anſwer, unleſs we may by Analogy ſuppoſe, that theſe minute Shell-fiſh grow large, and become capable of ſpawning the whole Coralline, in the ſame manner that the *Buccinum* of *New York* does its curious *Matrices* which are like long Bunches of Hops. See Plate XXXIII. Fig. *a*, *a* 1, and *b*.

Or, let us ſuppoſe, that the teſtaceous Animal, now in its utmoſt Perfection, lays its Eggs; theſe turn into vermicular-ſhaped Polypes, which, after they have fixed themſelves to ſome marine Subſtance, riſe up, and puſh forth into Branches of ſmall Polypes in their Cells, in a double Row, alternately placed in reſpect to one another; each having its proper Cell, which is divided from the other by very thin Partitions: And each little Polype is ſecured by an umbilical Ligament.

From this State then of being ſmall Polypes, we have obſerved, that they change into teſtaceous Animals, connected

to their Cells by the umbilical Ligament, till they are capable of providing for themſelves.

But whether this Ligament depends upon the Parent-Animal, as in the Caſe of the veſicular Coralline, Plate V. Fig. *A*, where the young Polypes are inſerted in a tender fleſhy Line, that paſſes through the Middle of the Branches, we have not been able to diſtinguiſh, for want of Opportunities of examining them often at the Sea-ſide.

Plate XX. Fig. *a. A.* N°. 2. *Corallina cellifera erecta, ramoſa & plumoſa, ſphærulas teſtaceas, ſumma parte aviumque capitum formas, a latere cellularum, gerens.*

Bird's-head Coralline.

This curious celliferous Coralline riſes from ſmall Tubes, which unite, and paſs into Branches of ſemi-cylindrical Cells diſpoſed in two Rows, articulated one into another: Their Openings face the ſame Way: On the Outſide of each Cell, we diſcover by the Microſcope, the Appearance of a Bird's Head, with a crooked Beak, opening very wide; the Uſe of which is as yet unknown to us, not having yet ſeen this Species recent in its proper Element.

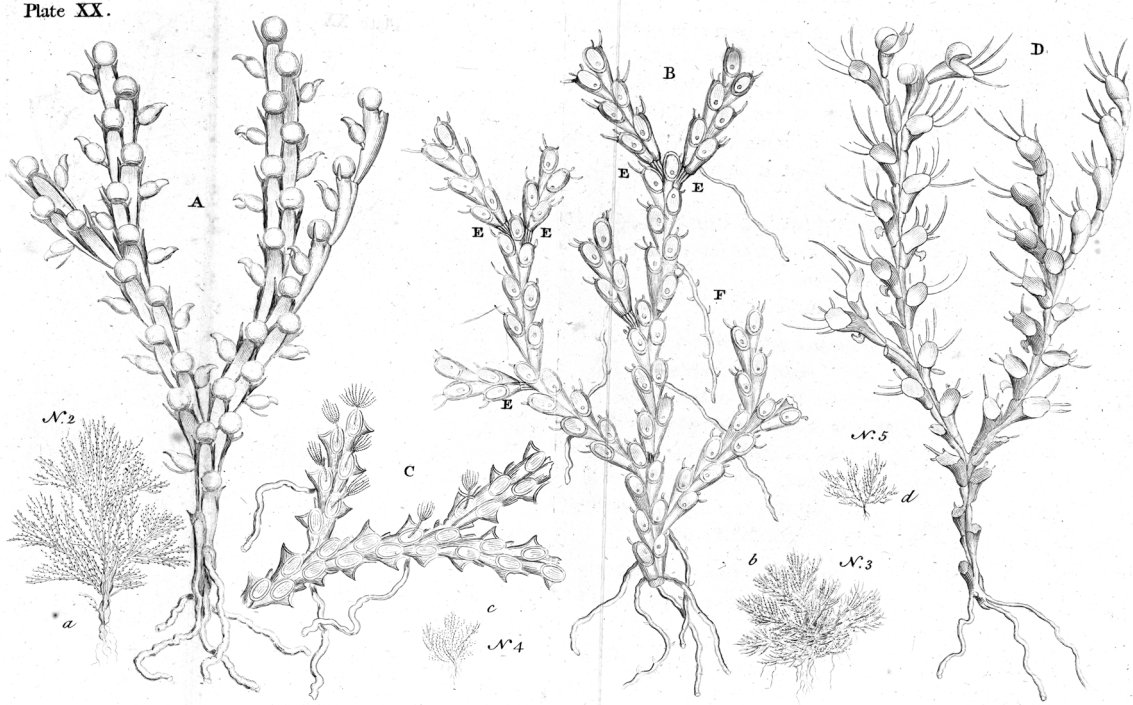
The Balls, or little teſtaceous Figures, are much the ſame as in the former Species. This Coralline is of a glaſſy brittle Nature.

Fig. *a*, gives us the Appearance of this Coralline, as it is commonly found. The Specimen, from whence the Drawing was taken, was received, among other marine Productions, from the Sea-coaſt near *Dublin*.

Fig. *A*, ſhews a Branch with its *Tubuli*, Cells, and other Parts magnified.

N°. 3.

Plate XX.



N°. 3. *Corallina cellifera minor, repens, ramosa, tubulis lævibus, interdum hamosis sparsim dispositis, fucis testisque alligata.* Plate XX. Fig. *b. B.*

Muscus coralloides pumilus ramosus. Dood. Appendix, R.S. 330.

Creeping Coralline.

This is the most common of all the celliferous Corallines, adhering to most kinds of submarine Substances.

The Branches are dichotomous, or divide into two constantly as they extend: The Cells are like inverted Cones, and their Openings, which are round, look one Way, and are commonly found defended by little Spines: The Order of the Cells rise in two Rows joined together, so as to be alternately opposite to each other. The Specimen magnified at Figure *B*, was found full of black Spots in the Cells, which, as hath been already mentioned, are nothing else but the dead Polypes. In other Specimens, we have observed little testaceous Balls at the Top of each Cell.

The Joints appearing in the Angles of the Ramifications, as in the magnified Figure, at *E*, are connected by some short pliant *Tubuli*, which serve as so many Hinges to the Branches, to play to and fro freely, and comply with the violent Motion of the Sea. These Hinges seem to consist of two short Tubes, one to each Row of Cells; and are so finely united to each Branch, that they seem insensibly to pass into the Cells of each.

This Coralline differs from most others in the Situation of its tubular Roots, which appear as in creeping Plants, to proceed from different Parts of their trailing Ramifications.

Some of theſe little radical Tubes are diſcovered by the Microſcope, to be full of Hooks, the better to ſecure the Coralline, when it adheres to ſoft ſpongy Subſtances. The Hooks on one of the Tubes are expreſſed at Fig. *F*, in the Coralline, *B*. the natural Size of which is exhibited at Fig. *b*, N°. 3.

When this Coralline is put into Vinegar, a ſtrong Effervescence enſues, till the ſtony or coral-like Coat is deſtroyed; and then the Cells, ſtill keeping their Shape, appear to be made of a thin pliable Membrane, like thoſe of the Hinges and Roots: So that Roots, Hinges, and Cells appear now to be one continued tubulous Membrane, only modified into different Shapes.

Plate XX. Fig. *c. C.* N°. 4. *Corallina cellifera minor, repens, ramoſa, & ſcrupoſa, cellulis alternis a latere angulatis.*
Creeping ſtony Coralline.

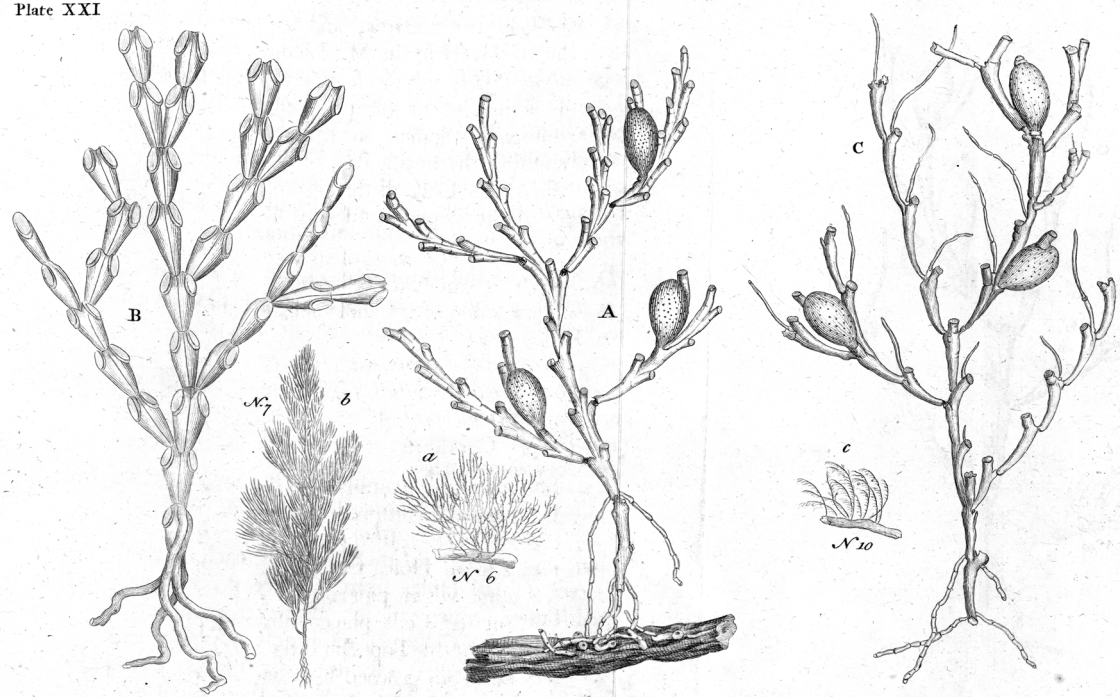
This Coralline differs from the former in having angular Sides to its Cells, and in being of a more ſtony brittle Texture.

While I was at *Ramſgate*, in *Auguſt* 1754, I obſerved the Polypes in the Cells, as deſcribed at Fig. *C*; which is a magnified Branch of Fig. *c*, N°. 4. in the ſame Plate.

Plate XX. Fig. *d. D.* N°. 5. *Corallina cellifera minima, erecta, ramoſa, cellulis infundibuli-formibus, baſi conjunctis, oribus patentiſſimis, ſuperne ciliatis, & alternatim prominentibus.*
Ciliated Coralline.

This very ſmall Coralline ariſes from many *Tubuli*, which unite, and ſend forth Branches of Cells of a Funnel-ſhape, placed

Plate XXI



placed alternately, and clofely united at the lower Part of the Sides: Their Entrances are very wide; and the upper Part of them, which projects, is full of fmall Hairs like Eyelafhes. Their Bafes are narrow, and feem to be jointed; and if we look attentively in the Microfcope, we may difcover a fmall white Hair, which feems to pafs through the Middle of each Branch at the joining of the Cells. This Coralline bears teftaceous Bodies on the Front of the Cells, fomewhat refembling the upper Part of an Helmet; and at the Sides of fome of the Cells, little Figures like Birds Heads, not unlike thofe of the fecond celliferous Coralline.

At Fig. *D*, we have the magnified Figure of this Coralline: And at *d*, N°. 5. the natural Size of it. Of all this Clafs of Corallines, this is one of the moft delicate and tender.

N°. 6. *Corallina cellifera minima, fragilis, ramofa, & veficulifera, colore eburneo cellulis tubiformibus conjunctis, paulum arcuatis, & fere oppofitis.* Plate XXI. Fig. *a. A.*

Tufted Ivory Coralline.

This Coralline, carefully examined in the Microfcope, appears to arife from minute compreffed Globules, which have been depofited on a *Fucus*: In the Centre of each of thefe, we may obferve a fmall Hole, from whence proceed very flender jointed Tubes, which pafs into Branches confifting of double Rows of tubular Cells placed almoft oppofite, and united at the Sides; but the Tops ftanding out a little: From the Side of thefe Branches proceed here and there fmall hollow Veficles, which are very brittle, and full of fmall Specks. Clofe to one Side of the Veficles, we have obferved a fmall Tube, which, no doubt, is the Entrance into them. This Species comes very near to the Clafs of veficular Corallines; for in fome Specimens of this Species at the Sea-fide, we have lately

lately diſcovered dead Animals in the Veſicles: But on account of their brittle ſtony Nature, their having black Specks in their Cells, and their Branches being united by ſmall tubular Hinges, they are introduced here.

Fig. *a*, N°. 6. is the exact Repreſentation of this Coralline, growing to a Piece of a *Fucus*.

Fig. *A*, gives the magnified Appearance of a Branch of it, as it riſes from the *Fucus*.

Plate XXI. Fig. *b. B.* N°. 7. *Corallina cellifera mollis ramoſiſſima, geniculis ad loricæ formam accedentibus.*

Muſcus coralloides mollis, elatior, ramoſiſſimus. App. R. S. 330.

Corallina geniculata mollis, internodiis rotundis breviori-bus noſtras. Pluck. Mant. 56.

Coat of Mail Coralline.

This Coralline, which grows into larger Tufts and Bunches than the reſt, conſiſts of many long, ſhining, ſoft, and ſlippery Branches: Theſe are compoſed of Joints of Cells, placed in Pairs Back to Back. The Opening of each is on a Slant near the Top, and looks the contrary Way to the other: So that the Pair together reſembles a Coat of Mail, or Pair of Stays; and the Entrances of the Cells look like the Places for the Arms to come out at. The Joints, or Pairs of Cells, ariſe inſenſibly from *Tubuli*, by which the Coralline adheres to its Baſe; and at certain Seaſons of the Year, we may obſerve ſmall black Spots in the Cells, like ſome of the reſt of this Claſs.

This Coralline is found in plenty along the Sea-coaſt of the Iſland of *Sheppey*; and is frequently found creeping upon, and inveſting the ſilk Coralline before deſcribed.

Fig.

Fig. *b*, N°. 7. repreſents the natural Appearance of this Coralline: This Specimen is but a ſmall Part of the Coralline, as it is commonly found.

Fig. *B*, is a Drawing from the Microſcope of a ſmall Branch, as it riſes from the *Tubuli*.

N°. 8. *Corallina cellifera minima, ramoſa, cellulis compreſſis, oppoſitis, ſiliculæ burſæ paſtoris formam æmulans.* Plate XXII. Fig. *A. a.*

Shepherd's-purſe Coralline.

This moſt beautiful Pearl-coloured Coralline adheres by ſmall Tubes to *Fucus's*, from whence it changes into flat Cells; each ſingle Cell like the Bracket of a Shelf, broad at Top, and narrow at Bottom: Theſe are placed Back to Back in Pairs, one above another, on an extremely ſlender Tube, that ſeems to run through the Middle of the Branches of the whole Coralline.

The Cells are open at Top. Some of them have black Spots in them: And from the Top of many of them, a Figure ſeems to iſſue out like a ſhort Tobacco-pipe; the ſmall End of which ſeems to be inſerted in the Tube that paſſes through the Middle of the whole.

The Cells in Pairs are thought by ſome to have the Appearance of the ſmall Pods of the Shepherd's Purſe: By others, the Shape of the Seed-Veſſels of the Herb *Veronica*, or Speedwell.

Fig. *a*, N°. 8. repreſents ſome Branches in their natural Size, creeping on the Stock of a *Fucus*.

Fig. *A*, repreſents a Branch with its ſmall Tubes, magnified by Number 5 of *Wilſon*'s ſingle Microſcope.

Plate XXII. Fig. *b. B.* N°. 9. *Corallina cellifera minutiſſima, ramoſa, & falcata, cellulis ſimplicibus, tauri cornu facie invicem inſertis.*

Bull's-horn Coralline.

This beautiful Coralline is one of the ſmalleſt we meet with: It riſes from *Tubuli*, growing upon *Fucus's*; and paſſes from thence into ſickle-ſhaped Branches, conſiſting of ſingle Rows of Cells looking, when magnified, like Bull's Horns inverted: Each one ariſing out of the Top of the other. The upper Branches take their Riſe from the Fore-part of the Entrance of a Cell, where we may obſerve a ſtiff ſhort Hair, which ſeem to be the Beginning of a Branch.

The Opening of each Cell, which is in the Front of its upper Part, is ſurrounded by a thin circular Rim; and the Subſtance of the Cells appears to conſiſt of a fine tranſparent Shell, or Coral-like Subſtance.

Fig. *b*, N°. 9. is the natural Size of this minute Coralline adhering to a *Fucus*.

Fig. *B*, ſhews the Tubes, and the falcated Ramifications of the Cells, as magnified by the fifth Glaſs of *Wilſon*'s Microſcope.

Plate XXI. Fig. *c. C.* N°. 10. *Corallina cellifera, minutiſſima, falcata, & cruſtata, cellulis capricorniformibus ſimplicibus, veſiculas gerens.*

Goat's-horn Coralline.

This very ſmall capillary Coralline conſiſts of Branches of ſingle Cells, ſhaped like Goat's Horns inverted, placed one

one above another: On the Top of each is a ſmall circular Opening which inclines inward: At the Back of this ariſes a fine upright Hair near the Inſertion of the next Cell above it.

This Coralline bears oval-ſhaped Veſicles, which are ſpecked, or pointed like the celliferous Coralline, N°. 6. with a ſmall Tube at the Back.

Fig. *c*, N°. 10. Plate XXI. gives us the true Figure of this Coralline adhering to a *Fucus*.

Fig. *C*, expreſſes an intire Piece, with its Veſicles and jointed Tubes magnified by the fifth Glaſs of *Wilſon*'s Microſcope.

This Coralline is nearly allied to the Sixth Coralline of this Claſs, on account of its Veſicles, only the Cells of this are ſingle with ſmall Hairs riſing out of them; and the Cells of that are diſpoſed in Pairs.

N°. 11. *Corallina anguiformis minutiſſima, non ramoſa.* Snake Coralline. Plate XXII. Fig. *c*. *C*

This ſingularly ſhaped Coralline proceeds from an irregular Tube, which is found creeping on the *Fucoides purpureum eleganter plumoſum.* R. S. pag. 38.

From very ſmall Holes in the broadeſt Part of this irregular winding Tube, there ariſe here and there ſmall teſtaceous white hollow Figures, exactly reſembling a Snake without the lower Jaw, in the Place whereof, is the Entrance into the Cell.

Fig. *c*, N°. 11. is the natural Size of this minute Coralline ſurrounding the Stalk of the *Fucus*.

Fig. *C*, expreſſes it magnified by the fourth Glaſs of *Wilſon*'s Microſcope.

The Body of this Snake-like Cell, when magnified by the ſecond Magnifier of *Wilſon*'s Microſcope, as at Figure *D*, appears to be jointed in the Middle, and to conſiſt of parallel Rings.

CHAP.

Plate XXII